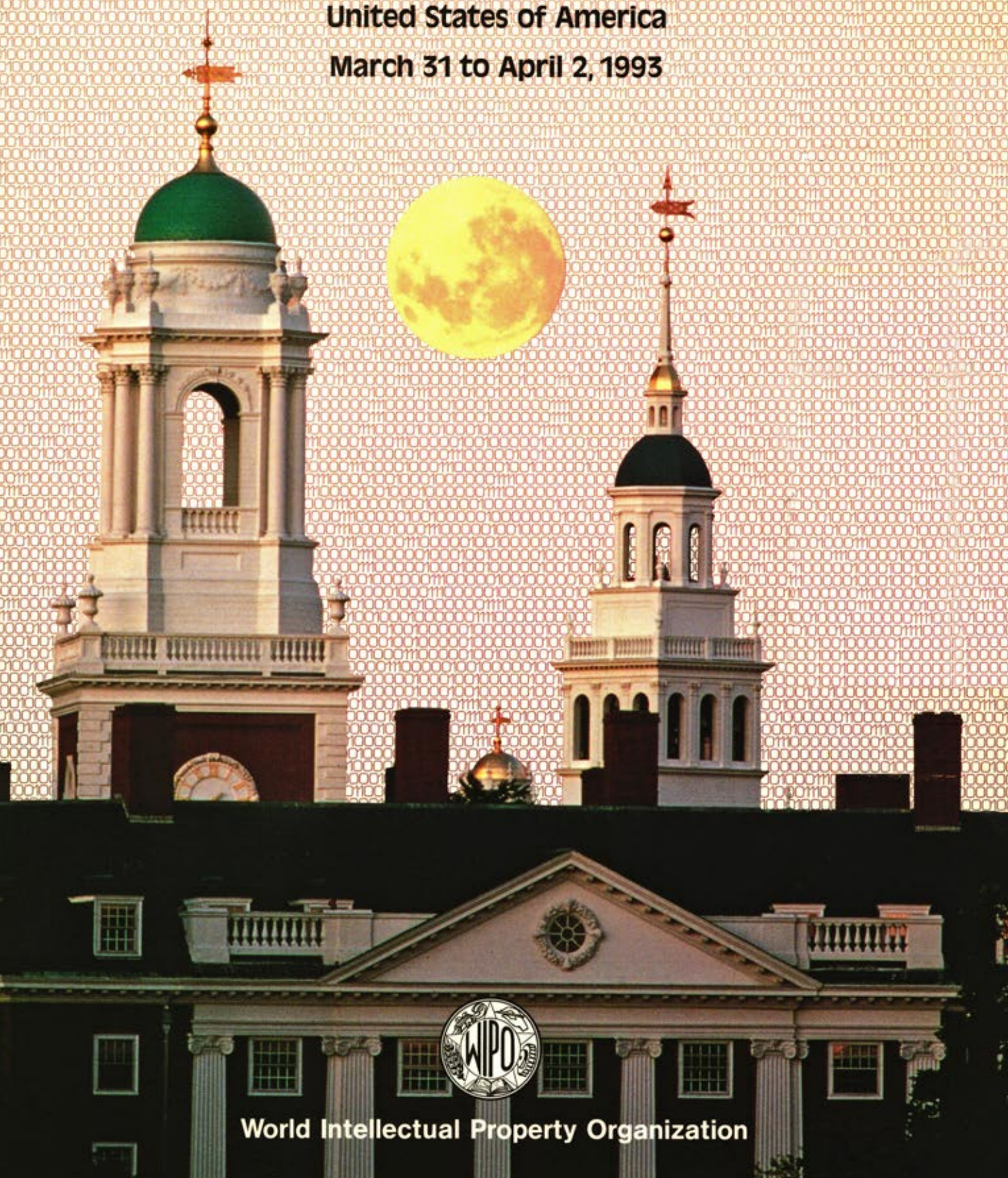


WIPO WORLDWIDE SYMPOSIUM ON THE IMPACT OF DIGITAL TECHNOLOGY ON COPYRIGHT AND NEIGHBORING RIGHTS

Harvard University, Cambridge, Massachusetts,
United States of America

March 31 to April 2, 1993



World Intellectual Property Organization

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THE IMPACT OF DIGITAL TECHNOLOGY
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**WORLD INTELLECTUAL PROPERTY ORGANIZATION
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The cover illustration is adapted from a photograph of some of the characteristic buildings of Harvard University, taken by Steven Dunwell. It appears here with his consent through special arrangement with The Image Bank, Switzerland.

PREFACE

The World Intellectual Property Organization (WIPO) organized a Worldwide Symposium on the Impact of Digital Technology on Copyright and Neighboring Rights at the Harvard Law School in Cambridge, Massachusetts, United States of America, from March 31 to April 2, 1993.

The expression "digital technology" refers to the use of equipment, and principally computers, which can accept and interpret digital data. The word "digital," which comes from "digits," means that information is reduced to a binary code of zeros and ones. Digital technology is spreading into many new and sometimes uncharted fields, mostly driven by two technological trends.

First, many types of data and an ever-increasing variety of literary and artistic creations can be expressed in digital code, permitting manipulation and exchange of data that were unimaginable only a few years ago. New computer-enhanced sampling and synthesizing methods used for creation of sound recordings, perfect recordings on compact disks (CDs), the distortion-free reproduction of digital recordings, computer-generated special effects for motion pictures, and crystal-clear cable distribution or broadcasting of musical works and (in the near future) audiovisual creations, are all possible through digital technology.

Second, as a result of the rapid evolution of computer technology, a growing segment of the general public can now have access to more and more powerful, yet smaller and smaller, computers with advanced software as well as to on-line data bases including interactive digitalized data bases.

Digital technology has opened new prospects for the creation and distribution of productions protected by copyright and neighboring rights. At the same time, if digital technology is applied without appropriate legislative measures adapting international standards and national laws to a qualitatively new situation, the technology may lead to conflict with the normal exploitation of such productions and unreasonably prejudice the legitimate interests of owners of copyright and neighboring rights. It seems, therefore, necessary to consider updating of the existing copyright system in the face of the challenges of this new technology.

The Symposium examined the current status and probable evolution of digital technology in all major fields of creation and distribution, as well as its implications for the protection of copyright and neighboring rights. Discussion focused, notably, on the uses of digital technology in the music, audiovisual and information industries and that technology's impact on the creation, dissemination and protection of works and of productions protected by neighboring rights. The scope of rights and the possible limitations on them were considered, as well as certain new technical methods offered by digital technology itself for the protection and administration of rights. Finally, an assessment of the likely long-term impact of digital technology was presented.

The Symposium included presentations by experts from the entertainment sector, the legal profession (both professors and practitioners), the field of computer science, and government. This volume contains the texts of those presentations.

The audience consisted of nearly 300 persons from a number of countries, including government officials, representatives of international intergovernmental and non-governmental organizations, business, and the legal profession. A list of the participants appears at the end of this volume.

The World Intellectual Property Organization is grateful to Harvard Law School for hosting the meeting. It expresses its thanks to the speakers, and in particular to Professor Arthur R. Miller, whose advice and assistance in respect of the organization of the Symposium was of the utmost importance.



Arpad Bogsch
Director General

World Intellectual Property Organization

August 1993

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New York, N.Y.
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University of Southern California
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United States of America

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Institut de l'Audiovisuel et des
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Montpellier
France

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Professor Arthur R. Miller
Harvard Law School
Cambridge, Massachusetts
United States of America

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PROGRAM

Wednesday, March 31, 1993

Opening Ceremony

Opening statement: Dr. Arpad Bogsch, Director General of WIPO

Welcoming remarks: Mr. Ralph Oman, Register of Copyrights, Copyright Office,
United States of America

Welcoming remarks: Professor Robert C. Clark, Dean of Harvard Law School

I. Concept and General Overview of Digital Technology

Moderator: Dr. Arpad Bogsch, Director General of WIPO

Speakers: Mr. David Baron, Director, Digital World, Associate
Editor, Seybold Seminars and Publications, Malibu,
California, United States of America

Mr. Morton David Goldberg, Schwab, Goldberg, Price &
Dannay, New York, N.Y., United States of America

Discussion

**II. Impact of Digital Technology on the Creation, Dissemination and
Protection of Works and Subjects of Neighboring Rights (Publishing,
Information Networks, Libraries)**

Moderator: Mr. Ralph Oman

Speakers: Mr. Charles Clark, Copyright Adviser, The Publishers
Association, London, United Kingdom

Mr. Jon A. Baumgarten, Proskauer, Rose, Goetz and
Mendelsohn, Washington, D.C., United States of America

Dr. William W. Ellis, Associate Librarian for Science and
Technology Information, Library of Congress, Washington,
D.C., United States of America

Mr. Ashok Bhojwani, Advanced Information Technologies,
Managing Director, TSG Consultants (P) Ltd., New Delhi,
India

Discussion

Thursday, April 1, 1993

III. Impact of Digital Technology on the Creation, Dissemination and Protection of Works and Subjects of Neighboring Rights (Audiovisual Works, Sound Recordings, Broadcasting)

Moderator: Mr. Morton David Goldberg

Speakers: Mr. Jason S. Berman, President, Recording Industry Association of America, Inc. (RIAA), Washington, D.C., United States of America

Mr. Nicholas Garnett, Director General and Chief Executive, International Federation of the Phonographic Industry (IFPI), London, United Kingdom

Mr. Robert D. Hadl, Vice-President and General Counsel, MCA Inc., Universal City, California, United States of America

Mr. Bruce A. York, National Executive Director, and Mr. Arthur J. Levine, Counsel, American Federation of Television and Radio Artists (AFTRA), New York, N.Y., United States of America

Discussion

IV. Digital Technology and the Administration of Copyright and Neighboring Rights

Moderator: Mr. Bernard Korman, General Counsel, American Society of Composers, Authors and Publishers (ASCAP), New York, N.Y., United States of America

Speakers: Professor Zentaro Kitagawa, Professor of Law, Kyoto University, Kyoto, Japan

Mrs. Gloria Messinger, Managing Director, American Society of Composers, Authors and Publishers (ASCAP), New York, N.Y., United States of America

Dr. Péter Gyertyánfy, Director General, Hungarian Bureau for the Protection of Authors' Rights (ARTISJUS), Budapest, Hungary

Miss Laurence Guédon, Legal Advisor, Agency for the Protection of Programs (APP), Paris, France

Discussion

Friday, April 2, 1993

V. Conclusions: Copyright, Neighboring Rights and Digital Technology:
New Dimensions for Creation, Dissemination and Protection

Moderator: Dr. Mihály Ficsor, Director, Copyright Department, WIPO

Speakers: Dr. Thomas Dreier, Head of Department,
Max-Planck-Institute for Foreign and International Patent,
Copyright and Competition Law, Munich, Germany

Professor Paul Edward Geller, Attorney, Adjunct Professor,
University of Southern California Law Center, Los Angeles,
California, United States of America

Dr. André Lange, Head of the Audiovisual and Cultural
Industries Department, Institut de l'Audiovisuel et des
Télécommunications en Europe (IDATE), Montpellier, France

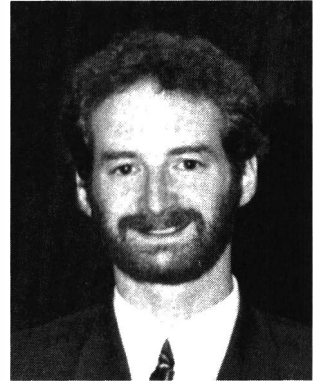
Discussion

Summary address: Professor Arthur R. Miller, Bruce Bromley Professor of
Law, Harvard Law School, Cambridge, Massachusetts, United
States of America

Closing
of the Symposium: Dr. Mihály Ficsor, Director, Copyright Department, WIPO

INFORMATION ON THE INVITED SPEAKERS

David BARON



Mr. David Baron, a national of the United States of America, is the Director of "Digital World," an annual, international conference that explores the convergence of the computer, consumer electronics, publishing, entertainment and telecommunications industries through common digital technology. "Digital World" is now entering its fourth year.

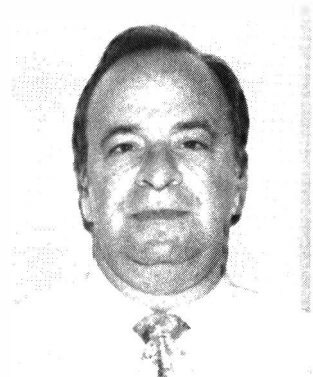
Mr. Baron is also Associate Editor of "Digital Media: A Seybold Report," a monthly newsletter based on similar themes published by the Seybold organization.

Mr. Baron is part of the Seybold organization, which has been tracking the integration of microprocessor technology in communications for a quarter century.

Before joining Seybold, Mr. Baron was involved extensively in the entertainment industry in New York, including theatrical productions both On- and Off-Broadway. He is a graduate of Yale University and studied at the Yale School of Drama.

* * *

Jon A. BAUMGARTEN



Mr. Jon A. Baumgarten, a national of the United States of America, is a partner in the Washington, D.C. office of the law firm of Proskauer, Rose, Goetz and Mendelsohn. Between 1976 and 1979, he was General Counsel of the U.S. Copyright Office, where he had a leading role in the development of the Copyright Act of 1976.

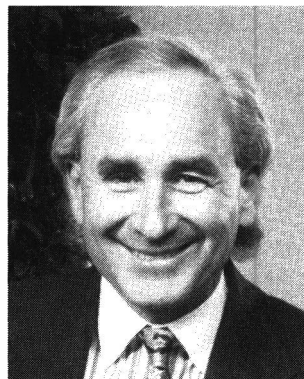
Mr. Baumgarten represents many U.S. trade associations and international consortia in the field of copyright, including the Association of American Publishers, the International Intellectual Property Alliance, and the International Publishers Copyright Council.

Mr. Baumgarten has authored numerous articles and a book on copyright relations between the United States and the former Soviet Union, and has lectured widely on copyright-related topics, including at the University of Copenhagen and at the International Law Institute in Washington. He has served on U.S. Government delegations to China, Japan, and WIPO, among others, and served as an Advisor to the U.S. Congress' Office of Technology Assessment (OTA) in connection with a study called "Intellectual Property Rights in an Age of Electronics and Information."

Mr. Baumgarten was graduated from the New York University School of Law, where he was an Executive Editor of the "New York University Law Review."

* * *

Jason S. BERMAN



Mr. Jason S. Berman, a national of the United States of America, has been President of the Recording Industry Association of America (RIAA) since 1987.

Prior to joining RIAA, Mr. Berman was Vice President of Public Affairs for Warner Communications, Inc. (WCI), and was responsible for establishing the Washington office of WCI. Before that, he headed a public relations firm which represented numerous companies in the entertainment industry.

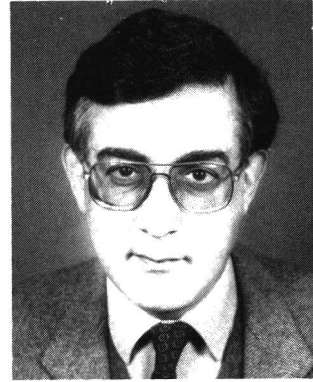
Mr. Berman served as Administrative Assistant to Senator Birch Bayh of Indiana from 1972 to 1976, and as the Senator's Legislative Director prior to that.

As President of RIAA, Mr. Berman is a member of the Board of Directors of the International Federation of the Phonographic Industry (IFPI), and is involved in the International Intellectual Property Alliance, which represents the U.S. copyright industries in international trade matters.

Mr. Berman graduated from the City College of New York, received a Master's degree from Northwestern University, and completed doctoral studies at the University of Pittsburgh.

* * *

Ashok BHOJWANI



Mr. Ashok Bhojwani, a national of India, is a Partner in the firm of Advanced Information Technologies, and the Managing Director of TSG Consultants, New Delhi.

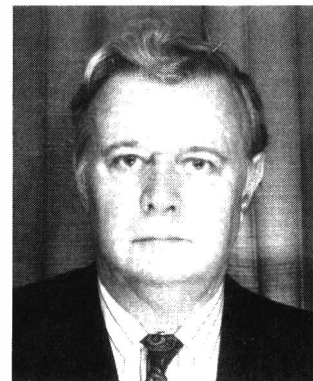
Mr. Bhojwani's experience in the field of information technology began in 1964, when he started a 14-year stint with IBM in the United States and India. He opened his own firms in 1978. His experience includes technology design for large computers, software design, systems architecture, education and information systems strategic planning.

Mr. Bhojwani has served as a World Bank consultant on electronics, software and communications projects in several developing countries. He is the editor of the TSG Reports on the Indian Computer Industry and the Software Industry in India, and has been invited by WIPO to present papers at numerous seminars and symposia.

Mr. Bhojwani received a Bachelors Degree in Electronics from the Indian Institute of Technology in Kharagpur, and a Master's Degree in Electrical Engineering from the Polytechnic Institute of Brooklyn, New York.

* * *

Charles CLARK



Mr. Charles Clark, a national of the United Kingdom, has worked in publishing for more than 35 years. Following an apprenticeship in legal publishing, during which he qualified as a barrister, he became Managing Director of Penguin Education in the 1960s, and Chief Executive of the Hutchinson Publishing Group in the 1970s.

Since the 1980s, Mr. Clark has made a second career of his legal interests, as an adviser on publishing law. He is copyright adviser to the Publishers Association and Legal Adviser to the Copyright Licensing Agency, both in the United Kingdom. He has also gained considerable international experience as the Copyright Representative for the Federation of European Publishers and as General Counsel to the International Publishers Copyright Council.

Mr. Clark is the general editor of the book entitled "Publishing Agreements" (1993, 4th edition).

* * *

Thomas K. DREIER



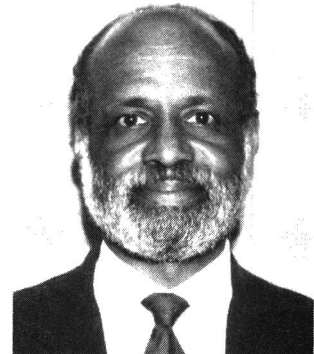
Dr. Thomas K. Dreier, a national of Germany, is on the staff of the Max-Planck-Institute for Foreign and International Patents, Copyright and Competition Law in Munich. He is also a legal expert on copyright questions for the Commission of the European Communities, and lectures on copyright at the Academy of Photographic Design in Munich.

Dr. Dreier has written and lectured extensively on topics related to copyright law, primarily computer programs and integrated circuits, cable and satellite programs, the harmonization of copyright laws in the European Communities, and GATT law.

Dr. Dreier holds law degrees from the University of Munich, the University of Geneva and the New York University. He is a member of the New York State Bar, the International Bar Association, the International Association for the Protection of Literary and Artistic Property (ALAI), and the German Computer Law Association (DRGI).

* * *

William W. ELLIS



Dr. William W. Ellis, a national of the United States of America, is currently Associate Librarian for Science and Technology Information at the Library of Congress (LOC) in Washington, a position he has held since September 1991. He is the principal LOC official responsible for science and technology information, and has developed a number of new technical information systems. He is also responsible for the computer and telecommunications operations of the LOC.

Dr. Ellis has a background as a public policy analyst and manager of research and development. He has been a senior analyst and executive in those fields both in the U.S. Government and in private industry. He has been a Senior Specialist in the Congressional Research Service, in the areas of infrastructure, education, small business, tax policy, and issues of concern to African Americans. He has also served as an executive and senior analyst in several research firms, working in the areas of transportation analysis, information systems development and maintenance, telecommunications engineering, and systems safety engineering.

Dr. Ellis has been a professor of political science at Northwestern University, the University of Michigan, and Howard University, and has been a visiting scholar at other American universities.

Dr. Ellis holds a bachelor's degree from Oberlin College and a doctor's degree in political science from New York University.

* * *

Nicholas GARNETT



Mr. Nicholas Garnett, a national of the United Kingdom, has been Director General and Chief Executive of the International Federation of the Phonographic Industries (IFPI) since March 1992.

Mr. Garnett began his legal career as a solicitor in the United Kingdom. He joined IFPI in 1983, was promoted to Regional Director for Asia and the Pacific in 1984, and in 1991 became the Director of International Operations and Legal Affairs.

Mr. Garnett received a law degree at Sydney Sussex College, Cambridge, and earned a further Diploma in law from the University of Bordeaux.

* * *

Paul Edward GELLER



Professor Paul Edward Geller, a national of the United States of America, is an Adjunct Professor of International Intellectual Property Law at the University of Southern California Law Center, Los Angeles, California. He is the General Editor of "International Copyright Law and Practice", an authoritative and widely-consulted treatise in the field.

Prior to specializing in copyright, Professor Geller maintained a general legal practice with clients in California and New York.

In addition to his editorial responsibilities, Professor Geller is a prolific writer and speaker on copyright-related subjects, including the relationship of certain copyright proposals of the European Commission to the Berne Convention. Professor Geller has taught comparative law at Golden Gate University, San Francisco, and was an instructor at the Universities of Paris and Toulouse, and at the University of Maryland, European Division (Paris).

Professor Geller received a B.A. degree from the University of Chicago, an M.A. from Brandeis University, and was awarded a law degree from the University of Southern California.

Morton David GOLDBERG



Mr. Morton David Goldberg, a national of the United States of America, is a partner at the law firm of Schwab Goldberg Price and Dannay in New York. His practice focuses on copyright, with a particular emphasis on computer programs and databases.

Mr. Goldberg has written and lectured extensively on various copyright-related topics. He was an adviser to the U.S. Copyright Office in the revision of the 1909 Copyright Law, and continues as a private-sector adviser in the formulation of the U.S. Government's copyright policy, particularly in its international aspects. From 1985 to 1987, he served on the Ad Hoc Working Group on United States Adherence to the Berne Convention convened by the Department of State. He has also served on the Advisory Panel for Information Technology and Intellectual Property of the U.S. Congress' Office of Technology Assessment, and on the Intellectual Property Advisory Committee to the department of Commerce and U.S. Trade Representative.

Mr. Goldberg has served as President of The Copyright Society of the U.S.A. and as Chairman of the American Bar Association Section of Intellectual Property Law, and as a member of the Boards of Directors of the American Intellectual Property Law Association and the Computer Law Association.

Mr. Goldberg graduated magna cum laude from Harvard University in 1951, and received his LL.B. from Yale University Law School in 1954.

* * *

Laurence GUEDON



Miss Laurence Guédon, a national of France, an associate in the law firm of Alain Bloch in Paris, is Legal Adviser to the Agency for the Protection of Programs (APP). She also contributes to "Expertises des Systèmes d'Information," a French computer law journal.

Miss Guédon's practice is concentrated on business law and intellectual property, particularly in the field of computer and information technology.

Miss Guédon earned law degrees from the Faculté de Droit Paris II and Paris Panthéon-Sorbonne, France, and from the University of San Diego School of Law in San Diego, California.

Péter GYERTYÁNFY



Dr. Péter Gyertyánfy, a national of Hungary, was appointed Director General of the Hungarian Bureau for the Protection of Authors' Rights (ARTISJUS), Budapest, in November 1992. Previously, he worked for ARTISJUS as Deputy Chief of the Legal Department, the Chief of the same Department and as Legal Director.

Since 1983, Dr. Gyertyánfy has been a part-time lecturer on international copyright law at the Law School of the Eötvös Loránd University, Budapest, where he was appointed Titular Head in 1990.

Earlier in his career, Dr. Gyertyánfy held positions in the banking and financial sector, including as counselor to the International Financial Department of the Hungarian Ministry of Finance.

Dr. Gyertyánfy was graduated from the Law School of the Eötvös Loránd University in 1968, and received a doctor's degree from the same University in 1990.

* * *

Robert D. HADL



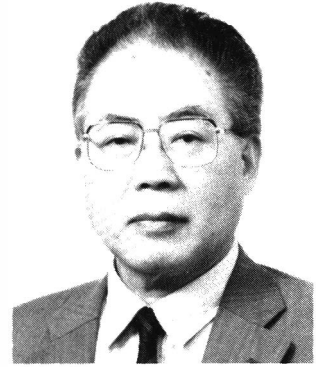
Mr. Robert D. Hadl, a national of the United States of America, is Vice President and General Counsel of MCA, Inc. MCA, located at Universal City, California, is a diversified entertainment company operating in the motion picture, television, music, and book publishing areas. Mr. Hadl has principal responsibility for all legal matters affecting MCA and its affiliated or subsidiary companies.

Before joining MCA, Mr. Hadl was an attorney in private practice in Washington, D.C. He was also an attorney specializing in international matters at the U.S. Copyright Office and the Federal Communications Commission. Mr. Hadl spent one year on the copyright staff of WIPO.

Mr. Hadl received a bachelor's degree from Columbia College, and a law degree from Columbia Law School, both in New York.

* * *

Zentaro KITAGAWA



Professor Zentaro Kitagawa, a national of Japan, is Professor of Law and former Dean of Faculty of Law at the Kyoto University and Director of the Kyoto Comparative Law Center, Kyoto, Japan. He obtained a ph.D from Kyoto University and the degree of Dr. honoris causa from Marburg University, Germany.

Professor Kitagawa is also a visiting Professor of Law at Harvard Law School, the University of Washington School of Law, Munich University and Marburg University. In addition, he is President of the Japan Association of Industrial Property Law.

Professor Kitagawa is the general author of "Doing Business in Japan" (10 volumes, Matthew Bender, New York, 1980 to date).

* * *

André LANGE



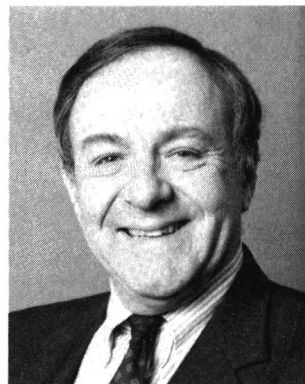
Dr. André Lange, a national of Belgium, is the Head of the Department of Media and Cultural Services at the Institut de l'Audiovisuel et des Télécommunications en Europe (IDATE), in Montpellier, France.

Dr. Lange is the author of various books, articles and studies on media, audiovisual and cultural policy and economics. Among his recent publications are "The World Film and Television Market" (IDATE, 1992) and "Nouvelles technologies et droit d'auteur," a report to the French Ministry of Education and Cultural Affairs (1993). Dr. Lange has also served as an expert for the Commission of European Communities, the Council of Europe, Eureka Audiovisuel, the French Ministry of Communication, and Unesco.

Dr. Lange received a doctor's degree in Mass Communications and Performing Arts Sciences from the University of Liège, Belgium, in 1986.

* * *

Arthur J. LEVINE



Mr. Arthur J. Levine, a national of the United States of America, is Counsel to the Washington, D.C., law firm of Finnegan, Henderson, Farabow, Garrett and Dunner. Among his clients is the American Federation of Musicians (AFM).

Mr. Levine has a long history of involvement with copyright, both within the U.S. Government and in the private sector. He spent eight years in the U.S. Copyright Office in positions of increasing responsibility, and served for three years as Executive Director of the National Commission on New Technological Uses of Copyrighted Works (CONTU), which recommended changes in the U.S. copyright law to ensure that computer programs were protected.

Mr. Levine has written and lectured widely on various copyright-related subjects, and serves as an Adjunct Professor of Copyright Law at the Georgetown University Law Center. He has also participated in several WIPO-sponsored research and training activities.

Mr. Levine was awarded the degree of Bachelor of Arts from Wesleyan University in Middletown, Connecticut, and received his law degree from Columbia University Law School.

* * *

Gloria MESSINGER



Mrs. Gloria Messinger, a national of the United States of America, is Managing Director of ASCAP, the American Society of Composers, Authors and Publishers. ASCAP, based in New York, is a collective administration organization which administers the rights of public performance in musical works of U.S. and international origin.

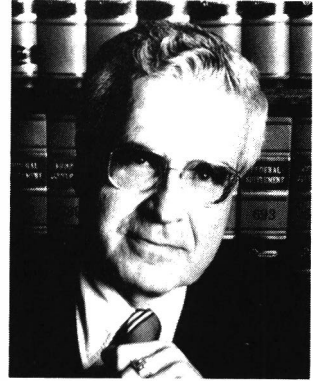
Mrs. Messinger has written and lectured widely on various subjects related to copyright, both in the United States and abroad. She also testified before the U.S. Congress on U.S. accession to the Berne Convention, and is a member of the U.S. Commerce Department Advisory Committee on Intellectual Property Rights for Trade Policy Matters.

Mrs. Messinger is also a frequent guest lecturer in copyright law at the Harvard, Yale, George Washington University, and Columbia Law Schools.

Mrs. Messinger received her bachelor's and master's degrees from Smith College in Northampton, Massachusetts, and earned her law degree from Yale Law School.

* * *

Arthur R. MILLER



Professor Arthur R. Miller, a national of the United States of America, is the Bruce Bromley Professor of Law at Harvard Law School, where he has taught since 1971.

Before joining the Harvard faculty, Professor Miller practiced law in New York City and taught at the University of Minnesota and the University of Michigan. Professionally, he is known for his work on court procedure--a subject on which he has authored or co-authored more than 25 books--, copyright, unfair competition, and remedies. He has also written, testified on, debated, and helped formulate legislation on the right of privacy. His book "The Assault on Privacy: Computers, Data Banks, and Dossiers" (1971) reached a wide readership.

Professor Miller has made frequent television appearances as a law commentator. He has also written occasional columns on legal subjects for various newspapers.

Professor Miller has held a number of public service positions in the fields of privacy, computers, copyright and courts, among them as a Commissioner on the United States Commission on New Technological Uses of Copyrighted Works (CONTU), as the Reporter for and member of the Advisory Committee on Civil Rules for the United States Supreme Court, and as the Reporter for the American Law Institute's Project on Complex Litigation.

Professor Miller has an undergraduate degree from the University of Rochester and a law degree from Harvard Law School.

* * *

Bruce A. YORK



Mr. Bruce A. York, a national of the United States of America, is the National Executive Director of AFTRA, the American Federation of Television and Radio Artists. AFTRA, based in New York, is a U.S. labor organization representing over 70,000 performers in the news and broadcast, entertainment, recording and advertising industries. Mr. York's responsibilities include coordinating the national contract negotiations with many companies which employ AFTRA members.

Before joining AFTRA, Mr. York worked for the Air Line Pilots Association, International (ALPA), the collective bargaining representative for the majority of commercial pilots in the United States. Mr. York held several positions with ALPA, the last of which was as Supervisor of Representation.

Mr. York was graduated from the University of Colorado at Boulder with a bachelor's degree, and received his law degree from The National Law Center, George Washington University, Washington, D.C.

* * *

OPENING ADDRESS

by

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Geneva
Switzerland



The Honorable Register of Copyrights, Mr. Ralph Oman,
The Honorable Dean of Harvard Law School, Professor Robert C. Clark,
Ladies and Gentlemen,

It is a great pleasure for me to greet the participants in the Worldwide Symposium on the Impact of Digital Technology on Copyright and Neighboring Rights.

I greet them in the name of the World Intellectual Property Organization, author of the idea of a symposium on this subject and organizer of the Symposium.

I greet the representatives of our member States, I greet the observers from various intergovernmental and non-governmental organizations, I greet--with the expression of WIPO's thanks and appreciation for their contribution--our invited speakers, and I greet all the other participants, among them many outstanding copyright experts and experts in the field of digital technology.

I thank--through you, Professor Clark--Harvard University, and particularly Professor Arthur Miller, for hosting the Symposium and--through you, Mr. Register of Copyrights--the Copyright Office of the United States of America and the various non-governmental organizations of this country for their cooperation in preparing the Symposium.

This meeting is called the WIPO Worldwide Symposium on the Impact of Digital Technology on Copyright and Neighboring Rights.

Let me take the various elements of the title of the meeting, in reverse order, by starting with the expression "impact of digital technology on copyright and neighboring rights."

Why have we chosen this theme for this Symposium?

For those who are involved in the research and application of digital technology, the answer is certainly evident. Nevertheless, let me refer briefly to the "state of the art" in this field.

Many types of data, and more and more categories of works and other productions protected by copyright and the so-called "neighboring rights," can now be expressed in digital code--in a long-long series of zeros and ones--and this means not only storage in digital format, but also the use of digital technology in the creation of such works and other productions qualifying for intellectual property protection. Such storage and such creation have been made possible by the rapid and spectacular development of computer technology with ever more efficient software and ever more powerful hardware.

The period when digital technology was merely concerned with writings and so-called "computer music" and "computer graphics" was a mere beginning. New computer-enhanced sampling and synthesizing methods combined with digital technology have brought about revolutionary developments in the field of sound recordings, where it is no longer correct to speak of mere "fixation," "making" or "production" of such recordings; increasingly, it is the word "creation" which corresponds to what is actually happening. We can witness similar developments in the field of the production of audiovisual works. Both those works and data bases have also received a new dimension with the advent of "multimedia" by means of which--based on the common effect of digital codes--all types of works and recordings (writings, graphic works, photographic works, audiovisual works, recordings of performances of musical works, etc.) may be combined and made available--"delivered"--to the public from a single technological source or from several technological sources.

The application of digital technology also concern performers. By means of digital sampling, it is now possible to create the impression that an outstanding artist, even if long deceased, has performed a new musical works which, in actual fact, he or she never performed. Such "recording" will sound exactly as if Callas or Caruso were singing the newly-written aria, or as if Louis Armstrong or Miles Davis were playing the newest hit on the trumpet. And it is an even more spectacular development that the same can now be done in respect of film actors. Humphrey Bogart or Gérard Philipe can "act" in a film now created, just as Sophia Loren or Elizabeth Taylor can appear today as if they were 20 years younger.

Digital manipulation of performers' productions may, of course, also involve some dubious aspects. The two actresses who starred in the recently produced film "Death Becomes You," Meryl Streep and Goldie Hawn, could speak about this. Digital technology was heavily used in the film, and, "thanks" to that technology, Meryl Streep appears in various scenes with a twisted neck and contorted limbs, while Goldie Hawn walks with a "window" through her body, through which we can see everything behind her.

The creation and manipulation of works and recordings only represent one area where specific copyright and neighboring rights questions may emerge. Digital technology has opened new dimensions for disseminating and using--"delivering"--works and other productions protected by copyright and neighboring rights. Now, perfect copies can be made of digital recordings. Such recordings can also be delivered by means of crystal-clear digital cable distribution and digital broadcasting, and through modern communication channels combined with interactive computerized systems, digitalized on-line data bases, including "multimedia," can now be made available to the public.

This digital technology opens new vistas for the creation and distribution of productions protected by copyright and neighboring rights. At the same time, it may also lead to conflicts with the normal exploitation of such productions and may unreasonably prejudice the legitimate interests of owners of copyright and neighboring rights, if this technology is applied without appropriate legislative measures adapting international standards and national laws to a qualitatively new situation. It seems necessary to update the existing copyright system in the face of the challenges of digital technology. Not only should the scope of rights and the possible limitations on them be reconsidered, but also certain new technical methods offered by digital technology itself for the protection and administration of rights should be envisaged.

In our document entitled "General Information," the Secretariat of WIPO included a number of questions it would like to be discussed. In certain cases, we even gave tentative answers to some of those questions. I do not repeat them here since those questions will soon be raised, and hopefully answered in detail, in a series of presentations by outstanding experts.

So much about the words "digital technology" in the title of this meeting.

The meeting is called "symposium" which indicates its nature and objective. The word "symposium" stresses that the objective is a free exchange of ideas about this new phenomenon, in preparation for further activities--for example, international norm-making--in fields where such activities may be justified.

The adjective "worldwide" is used in the title of the symposium which indicates at least two things; first, it indicates that we have invited speakers and participants from all over the world, and, second, it indicates that the subject itself is of a global dimension; the development and application of digital technology require close cooperation among researchers, producers and users--as well as among governments and legislators--of all countries.

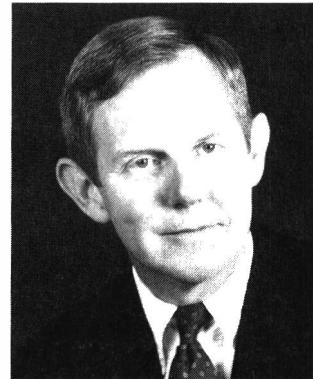
Hence the interest of the World Intellectual Property Organization in this subject. That is the reason that the acronym "WIPO" appears in the title of the symposium. There are several current WIPO activities--particularly the preparation of a possible protocol to the Berne Convention and a possible instrument for the protection of the rights of performers and producers of phonograms--where the results of this symposium may be put to immediate use, particularly in the planning of future WIPO activities.

I thank you all for being here and I thank you in advance for the lectures that some of you will deliver and the contributions that, I hope, many of you will make during the discussions that will follow the lectures.

**REFLECTIONS ON DIGITAL TECHNOLOGY:
"THE SHAPE OF THINGS TO COME"**

by

Ralph Oman
Register of Copyrights
of the
United States of America



Dr. Bogsch, Dean Clark, Professor Miller, Professor Kitagawa, Dr. Ficsor, friends, and colleagues: I am honored to be in the company of so many of the world's leading copyright specialists to examine, in H.G. Wells' phrase, "the shape of things to come." Dr. Bogsch has convened an extraordinary gathering of the copyright clan, and the few experts who are not here today will be trying to explain for years to come why they weren't here. One hundred years ago, in 1892, Mrs. Vincent Astor gave a party to which she invited 400 people, the crème de la crème of New York society. That party defined New York society for generations to come. Mrs. Astor's 400 has become Dr. Bogsch's 350; how times have changed--for the better. I am very proud to be included in that high society of copyright.

How apt for us to meet at one of the world's great seats of learning. And you all honor the United States by meeting here in Cambridge. For many years the United States has served as one of the key testing grounds for new copyright technologies, and many of the flagship copyright industries are well represented here today, ready to teach and ready to learn.

In the classic American film, "The Graduate," a drunk tycoon gave Dustin Hoffman a famous word of career advice: "Plastics." In an eerie replay of that scene, a certified Hollywood mogul gave a member of my staff another one-word bit of career advice. He leaned forward conspiratorially and uttered the magic word: "Digital."

The furor over digital technology and its impact on copyright will hold us in thrall for years to come. And Dr. Bogsch, with his characteristic foresight, has convened the opening round of the debate. As speakers far more expert than I will soon make clear, digital technology has already had a great impact on education, libraries, archives, and the business of scholarly publishing. It has not yet turned the great entertainment industries upside down. Until that happens, the good old-fashioned realm of print publishing will define the arena in which we will first confront the complex problems raised by digital technology: organizing production, marketing, licensing, accounting, moral rights, and enforcement.

For the last 50 years, copyright scholars have built whole careers around "the challenge of new technology." Well, that new break-through technology is finally here, and it's knocking at the door.

The technology of publishing has certainly evolved, but the often apocalyptic rhetoric about copyright and authors' rights remains weirdly the same. We have heard and will hear again of the growing irrelevance of traditional copyright law. We have heard and will hear again that copyright will become a system of compulsory licenses. We have heard and will hear again that copyright will degenerate into a right of "equitable remuneration."

Some pundits say there are too many works, too many uses, and too many users to sustain a legal tradition based on contract. They say there is too much decentralization of copyright transactions since personal computing merged with digital media, and today's copyright law can't cope with the chaos in a balanced and effective way.

These pundits say that we have reached the end of the copyright road. They would rather develop new producer/publisher/disseminator "neighboring rights" for the digital environment instead of sharpening the traditional tools that protect authors' rights.

Some of these predictions overstate the threat, and, by overstating it, cause us to take it less seriously. Too often we hear that the sky is falling, or that civilization, as we know it, will end. Still, the Cassandras, even if not believed, at least get our attention.

So here we are in Cambridge to take the measure of the looming digital age. For copyright industries, this conference marks the official end of the age of manufacturing and ushers in the beginning of the post-industrial age. I would like to explore the implications of this stormy ocean crossing in broad strokes, and set the scene for the experts to follow.

Authors, assignees, employers, and performers have all identified essentially the same problems. Enterprises that depend on the manufacture and public distribution of copies of works see troubled waters on the horizon.

We see new technologies driving more and more creative works into digital formats. Let me mention a few: the growth of personal computing; the proliferation of scholarly information networks; satellite technology; storage and preservation considerations; and whole new markets for consumer electronics hardware.

Here in the United States, a rational, digital information "network" is rapidly evolving. It is not--at least not yet--the product of a single federal program, or plan. It is an organic phenomenon; a steady, slightly chaotic, information quilting bee--a piecing together of large and small users, of networks and information resources, into a publicly accessible whole. While the cutting edge of this development remains scientific, technical, and medical publishing, the powerful logic of digitalization sees the TV and stereo collapsing into the PC.

In this environment, every plugged-in consumer is a potential author, a potential publisher, and a potential infringer--all at once or at different times. Everyone will have the capacity to manufacture copies of works of perfect quality. For many literary works, sound recordings, films and television, pictorial and graphic works, and computer programs, this means demand distribution, and packaging becomes a matter of consumer choice.

Just last week, Chairman Bill Hughes and his subcommittee on copyright held an extraordinary hearing on the desirability of creating a public performance right in sound recordings. There have been, of course, literally dozens of congressional hearings on the subject over the last two generations. What was extraordinary was the pervasive feeling that "things have changed." The question of public performance rights in sound recordings is no longer a matter of beefing up the revenue bases of the record industry. It was being considered in the context of digital broadcasting as a logical replacement of traditional manufacture and distribution of CDs and tapes for public sale.

The public performance right--a thorny policy issue for as long as one can recall--is now being seen as a key to realizing the so-called "celestial jukebox"--a vast electronic database of digitally stored recordings distributed via satellite to home subscribers. Record companies will become more completely engaged in creating and storing performances for others to manufacture at their own expense. And consumers may choose to buy an hour of music without making a copy, or they may choose to create their own albums on their own digital equipment. The emerging digital cable music delivery service now being touted is just a halfway house on the yellow brick road to the Emerald City.

To publishers, the "celestial jukebox" translates into what electronic publishing specialist Tony Feldman calls "customer controlled publishing of the 21st Century." On-line primary publishing, unbundled text, and instructional publications--these developments in the staid world of publishing are close kin to the flashier "celestial jukebox."

Although further off, the same technologies and marketing structures fit audiovisual works. After all, broadcasters, theatrical exhibitors, and video retail renters are all in the same business: they juggle physical copies to get ephemeral performances on home television screens. Call it the "celestial box office" or "viewer controlled television of the 21st Century." Whatever you call it, it is essentially the same sort of challenge that other copyright industries will face.

Back in 1976, the drafters of the United States Copyright Act were smart beyond measure when they noted that information and communications technologies were diminishing the centrality of the right of reproduction and the right of distribution of copies in the copyright hierarchy. The exclusive right of public display and a much strengthened right of public performance were essential, they said, to future copyright protection. What they may not have anticipated or fully appreciated was how fast that change would come. And that leads me to some final observations about digital technology.

First, unlike other so-called "challenges" to effective copyright exploitation, digital technology has important application to the detection, monitoring, licensing, and inhibition of uses of protected works. Certainly, there are anti-copying technologies used in analog media. But this is very primitive stuff compared with the copyright management possibilities using personal computers.

This leads to a related point. I see increased attention to the protection of copyright owners' commercial interests by legal means outside of copyright. Let me oversimplify. Policy makers and commercial pace-setters want better protection of the digital envelope to complement protection of the copyrighted message.

They are exploring concepts such as theft of service, interference with contractual relations, protection of encryption and decoding systems, "smart cards," and SCMS analogues. Such ideas almost always imply that public rather than property law will play a bigger part in the protection of authors' rights than the current copyright laws of most countries. These issues will doubtlessly arise and recur over the course of our discussions here this week and in the years to come.

This leads me to a conclusion I want to press upon you with the greatest respect. Digital technology poses several options for copyright policy makers, and those options in turn pose some real danger to authors' rights. Not only from digital uses or "infringements," but also from the growing sentiment that the classic laws of authors' rights show signs of age. In our drive to protect a host of players--service providers, dealers in copyrighted materials, satellite resale common carriers, cable companies (it's a long list)--we run the risk of thinking that we have naturally protected the author and copyright owner. Not so. Obviously, these businesses deserve protection against rip-offs. But their rights should never be confused with authors' rights.

The very best copyright laws everywhere have always protected the power of the creator against the power of owners of technologies that earn money exploiting the creations of authors. That has been so whether the technology is the printing press, the entrepreneurship of publishers and broadcasters, or of electronic information storage and retrieval systems. The debate over technology and the interests of authors is the very essence of copyright thinking--the core that makes copyright law historically unique, socially revolutionary, and worth fighting for.

One of the principal tasks of this symposium involves the reaffirmation of the fundamental purposes of copyright. The reshaping of the world's communications systems is not a challenge to a static, industrial-age notion of property. The author stands at the center of our copyright universe, and we must preserve that vital core as one age slips seamlessly into another, as one technology transitions effortlessly to another. The author must enjoy the power to authorize or prohibit utilizations of his or her creative expression. We--at least those of us who believe in the goals of the Berne Convention--should not see our job here as planning a new regulatory future for our copyright marketplace. Instead, let's find ways to bring the digital environment under the control of the author. Let's make digital technology, not just a blessing for all citizens, but a valued servant of authors' rights as well.

I trust that the brainpower that Dr. Bogsch has massed here at Harvard will part the curtain and give us a teasing glimpse of "the shape of things to come."

Let the show begin.

WELCOMING REMARKS

by

Robert C. Clark
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Good morning. It is my role to welcome you to this Symposium of the World Intellectual Property Organization at Harvard Law School. I am extremely happy that the Law School is able to provide the facilities for this conference, and I am deeply honored that you have chosen to have it here. It is a fitting setting for what you are doing, I think. Harvard University, after all, being a great university, is a setting in which intellectual property is what we are about. The University is full of creators and users of intellectual works.

It is fitting also that this Symposium is being held at the Law School. There are many ways I could nail that down; it is more than just a rhetorical statement. One indication is this: of the ten schools at Harvard University, the Law School is the one that spends, year after year, the largest percentage of its budget on its library. This is a common situation in other universities, too. Law is, by its nature, an activity that is concerned mostly with the verbal output of human beings, much of which has been reduced to writing or other information storage forms. We are talking of statutes, rules, regulations, judicial opinions, commentary, analyses, theories, some public, some private, some protectable by copyright, much of it, if not all of it, needing to be managed. Also, the new technological innovations have raised legal issues of enormous importance to the people at the School. Obviously, your deliberations in this Symposium will have profound significance for the way we in the Law School would teach intellectual property and related subjects. You will have a profound impact on the way in which our graduates will function as lawyers, judges, legislators and law teachers. And so I am extremely happy to have you here. It is an exciting time, as the prior two speakers indicated, and it means that there is a tremendous amount of work in store for copyright lawyers. They will be very busy coping with the impact of new technologies, or at least the established ones.

I cannot help but think about one of my favorite stories on the impact of an old technology on law practice. It is about a young copyright lawyer who was sitting in his newly established office all by himself, waiting for some business to come in the door, flipping through various copyright statutes, aimlessly. Suddenly, a man appears at the door, and he says, "Come in." And as he says that, he swings around to the telephone, picks it up and begins an imaginary conversation, says to the person on the phone, "I am sorry, Mr. Smith, I have to be in Court all afternoon and tomorrow morning, and then

I have to do research and I am just back-to-back with appointments the following two days. If it is really important, I could fit you in on Saturday morning at 6 o'clock. I am sure we can solve your problem." He puts the phone down and turns to the man at the door, and he says, "Now, what can I do for you?" The man at the door says, "Nothing, I am just here to connect the telephone."

I know that in addition to being fascinated with new technologies, there is the issue of how they relate to legal practices. I am a corporation lawyer, not an intellectual property lawyer, but I do think that in some sense it appears to observers that you are dealing with the eternal issues, like the conflict between the desire to give incentives and protection to those who create intellectual property, on the one hand, and the desire to provide for efficient and cost-effective dissemination of information, ideas, and artistic works, on the other. That is an age-old controversy. What does new technology really have to do with it?

Many think that new technology has a profound impact on the ways in which we can try to reach, in legal terms or contractual terms, an equilibrium between those objectives. Others can doubt this. One of our faculty members, Professor Arthur Miller, who is a copyright specialist, has just produced and published a few days ago, in the Harvard Law Review, a major article on copyright protection of computer programs, databases and computer-generated works, which I commend to all of you because it explores some of these issues. It is dealing essentially with the questions of the actual impact of new technological developments on the operation of the law. Is the law adequate the way it is? Is it adjusting? Are radical changes really needed? If so, what are they? Those are important issues.

Now, this in turn reminds me of one further story. This one, unlike the other one, is true. I am, besides being a Corporations Professor and a Dean of a law school, a serious amateur composer. I compose neo-classical music using synthesizers. I love technology, digital equipment. I have things in my home studio that Beethoven would have killed for. If he had had the technology, then he would really have done something. Well, a few years ago, I decided what I really needed to do was get away from multi-track tape recording, because it was such a nuisance to record one track and then another, bounce them together, make a master, and make copies. At each level you lose quality. If you listen to your work carefully, you can hear the deterioration at each step of the process. So, on one of my fund-raising trips for the Law School a few years ago, I walked into one of the big music stores in New York, and I said to the sales person, who looked like a rock musician trying to make ends meet and like he had not seen the light of day in twenty years at least, "Hey, I want to get one of these digital tape recorders, right, so I can really produce good tapes for all my friends who consent to listen to the stuff I compose and perform." He says, "This is great." So, he shows me a professional quality digital tape recorder which was quite pricey, but I decided that this is important. I buy it. Then I said, "You know, I want to make copies. How do I make copies? Do I have to buy another one?" He says, "No, just go down the street to one of these consumer electronics places and buy a consumer DAT. You can, you know, do all the fancy things on your professional DAT recorder and then make copies for everyone on this other thing. The quality is just as good, it has some simplifications." So I said, "O.K., thanks." It saved me 800 dollars to do it that way. I set up the system. Does anybody here know where the story is going? Have any of you tried to compose music or produce it? What happens is

that you have to go through many versions of a composition. There might be three or four synthesizers all playing different instruments and sounds. You play them about a dozen times until you finally get one version or tape that is good. Each one is recorded on a digital tape. When you have done a whole bunch of compositions and you want to assemble them into something you can show people, you take version number 5 out of the 12 versions of your first song, and version number 3 of the 10 versions of your second song, and so on. You put them in order on a so-called "master tape." That is phase two. In phase three, you then try to make a copy, a digital copy of the master tape, and the answer is: it is impossible because there is this little copyright protection device on the consumer machine that seems to be undefeatable. The aim is to stop you from making second generation copies, and it works all too well. I spent the better part of the weekend trying different ways of connecting the two machines, trying different types of connections, different procedures, being frustrated and cursing all weekend. That was my experience.

Now, what does this experience tell us? As I walked in here today, it occurred to me that some of you in this room have had a part in devising this system, and I want you to know that I tried to take a high-minded reaction to it. I have prayed to the Creator of us all, not for your eternal damnation, which would be justified, but for your eventual repentance and enlightenment. More seriously, I am trying to say that we need elegant solutions. I am not sure that we always have the elegant solutions to the desire to protect the interests of creators, on the one hand, and users, on the other. Why should these poor rock musicians who want to produce good demo tapes have to spend the money to buy the professional quality DAT machines? Isn't there a better way to adjust? I leave this question for you. It is just symbolic, I think, of a lot of issues that are going on, and I really hope that your work, in this Symposium and outside of it, will lead us to a better world where all the interests are protected, but where we still manage to do it efficiently.

Well, let me close finally. I wanted to thank a couple of people on our faculty. First, Professor Miller who has had a lot to do with having this Symposium here, and Professor Lloyd Weinreb who has been active in teaching copyright along with Professor Miller. I also want to thank Dr. Bogsch and others for choosing to have the Symposium here.

Finally, I want to say that I am very pleased that you will get a summary of all these proceedings, because I really do expect that they could have tremendous global significance for law practice and for business practices. So, I say to you, "Good discussions, good listening, good luck."

Enjoy the Symposium.

DIGITAL TECHNOLOGY AND THE IMPLICATIONS FOR INTELLECTUAL PROPERTY

by

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I would like to thank the WIPO organizers, especially Mr. Ficsor, for inviting me here today. The WIPO Worldwide Symposium On The Impact Of Digital Technology On Copyright is an important gathering, and this is a critical issue to the success of the new forms of entertainment and information that are on the horizon. It is quite an honor for me to be here.

Never before have we been faced with so many new options and opportunities for creative and intellectual expression as we will have in the next few years. Methods of expression and exploration that have been impossible, unthinkable, only a few years ago are now on the horizon due to technological innovations.

The issues surrounding intellectual property and technology are governed by three forces: those of the law, which survive (and grow) on history and precedent; societal relationships, by which I mean the business structures that have developed over the years between the producer/owners of these properties and the artistic individuals who actually create the work. This is best exemplified by the relationships between the guilds and unions with the producing organizations of Hollywood. The third force is the technology itself.

Digital technology has created a situation with which the law has never had to deal before: intellectual property--that is the creative works and ideas of individuals or groups--can now be created, delivered and expressed regardless of playback device or delivery medium. In fact, there may no longer be a delivery medium, as the information will simply be delivered "out of the ether" through the airwaves or cables.

What are the implications of this transition? Does the change from analog to digital information require a wholesale rethinking of copyright law? The answer, thankfully, is no. However, we do need to think about intellectual property in a new way. We need to think differently about how we define these properties, how we value them and how we protect them.

The three forces that are shaping our treatment of copyrights must be considered in parallel; you cannot make determinations about one, without understanding the ramifications and effects on the others.

The world is changing in a truly fundamental way, and we have the chance to be a part of that change. This change, and these opportunities, all derive from a dramatic shift in the way we communicate with each other, the ways we express ourselves, the ways in which we learn, and teach and inform and entertain each other. This is the Digital World.

The Digital World is one in which all information and entertainment is created and distributed digitally. That means that the words you write, the music you compose and perform, the images you create and the movies that you film will all reside in the digital domain, the language of ones and zeros that computers speak. This has far reaching implications for everyone from the creators and performers of this content to the distributors and the retail channel, the computer industry, the consumer electronics industry, the telecommunications industry (including the telephone companies, the cable television operators and the satellite broadcasters) and the lawyers and business people who structure the relationships between all of these disparate parties.

Douglas Adams, the author and pundit, expressed this in vivid terms at the first Digital World Conference almost four years ago. We have, he said, already experienced a "critical mass," which occurs when something collides with computing technology. It has already happened with publishing; it has happened to a lesser extent with music. Now we are about to experience a "diacritical mass of critical masses" as the worlds of computing, publishing, entertainment, consumer electronics and telecommunications all merge together through common digital technologies.

This changes everything. And it is with this central idea in mind that we address the newly critical issues surrounding creativity, freedom, intellectual property and copyright law.

The single question holding back this new industry is this: how can we create the legal and business structures to exploit this new medium, while at the same time protecting the creations and creators?

My goal here today is not to address the legal issues surrounding digital technology--I am, after all, not a lawyer--but to address the implications of the technology on intellectual property. I will probably raise more questions than give answers, but I hope to do so in the context of the discussion which will follow over the next few days. I would like to start by laying down some foundation:

Why is the switch from analog to digital information creating such a disturbance in the status quo? The answer goes far beyond the simple ability to make perfect copies or manipulate someone else's work.

Digital information is peculiar, and often disconcerting, or frightening to the uninitiated. With digital information, we have effectively separated the content from the carrier. Let me repeat that: the content--music, video, data, what have you--is no longer bound to a particular medium--a book, record, tape, score, etc. We can now access information and entertainment without regard for the media upon which it is delivered. In many cases, there may not even be a physical medium.

Information in digital form is intangible--you cannot "see" something that is digital. You cannot hold in your hands a digital photograph, or hear a digital sound unless it is processed and projected through a microprocessor-controlled device, like a computer or a CD player. But it has properties that are extremely powerful.

As you know, digital information can be copied indefinitely with no loss in quality typical to multi-generation copies of analog media. In addition, the information is malleable: it can be combined, altered, mixed, and manipulated with relative ease. These properties are both a blessing and a curse to the creative community, at the same time enabling people to do things never before possible, and yet making the threat of theft and copyright infringement all too clear.

Since the medium is unimportant, and the information can be copied perfectly, digital data has an infinite life. Unlike the decaying film archives of the movie studios, or deteriorating 78 rpm recordings or the disintegrating libraries of rare books and manuscripts, a digital recording of Madonna's latest cut can be played back perfectly a thousand years from now; an obscure philosopher's ramblings will be accessible to future university students.

There are three forces driving the technology in the new digital world.

The first is the rapid development of digital processing power.

The second is the communications infrastructure that is now being deployed.

And the third is content--the creative and informational material that will drive the consumer to purchase new products or services and increase the opportunities for creative expression. I would like to address each in turn.

The microprocessor is the brain of any computer. And it is cheap microprocessing power that makes the Digital World possible. Computing power is currently doubling approximately every 18 months. That means that by the end of the decade, we will have a 32-fold increase in the processing power available in an average personal computer. It also means that by the end of the decade, your television set could have the processing power of today's super computer. In other words, imagine a computer far more powerful than any Macintosh available today built into your TV, or sitting on top of your television, hidden in a cable or satellite decoder box.

The second driving force is the development of one or many digital information highways. What happens with cable television, telephony, satellite and wireless communications will determine what we can and cannot do. The communications infrastructure will enable the delivery to the home of what we traditionally consider movies, books and music. Vast libraries of information will be available "on-line" and virtually on demand. There will be so much bandwidth, or pipeline, available that the cost to transmit over those lines will be minimal. And this bandwidth will be one of the most powerful tools available to break down the artificial barriers of state and country, an especially important idea at an international gathering such as this.

What does this all mean? Nothing less than a complete departure from the way we communicate with each other and the way we do business.

I'll give you a simple example of a technology being developed today. Blockbuster Video, one of the largest video rental and music retail chains in the world, has developed a system through which it will be able to record compact disks, or any other digital storage medium, on-demand, at the retail location. With relatively inexpensive digital storage capabilities, 10,000 of the latest records could be available at the local store, without holding any inventory. And with the digital highways under development, 100,000 titles could be stored centrally and "down-loaded" or delivered, to the retail outlet with ease. Imagine: every recording ever made, available at your local record store. Of course, the technology would work just as well with digital movies, video games, interactive multimedia, computer software, books, databases, musical scores--remember: in a digital world, everything is digital. And also remember, what works in limited applications in business today, could just as easily work in the home tomorrow.

Which brings me to the third driving force: content. Digital and interactive media is still in its infancy or, perhaps adolescence. For the past four years, the computer industry has been trying to convince the world of the value of interactive media. But the computer industry consists largely of computer technicians, who desperately need the input of the creative community. They need this group to tell them how to use the new technology. They need the composers and musicians, the authors and screenwriters, the artists and designers, the directors and editors to show them what to do with these extremely powerful new tools.

The creative community, however, is caught up in the same legal, social and technical questions surrounding rights, protection, and payment as are we all.

At issue is not copyright law, which is quite clear, but the lack of definition, or at least the vagaries of definition, of the products that we are trying to protect. Current copyright law in the United States has been designed around four different publishing industries: books, music, film and computer software. The business and marketing arrangements that surround each of these industries are very well established, and for all intents and purposes work very well.

Now, imagine a commercial industry going through adolescence--one that is the offspring of four different parents: who am I? it is asking itself. I am not a book; I am not a movie; I am not a string of computer code. Who am I?

As a youth, it admires its parents for their particular strengths, and rebels against structures and burdens placed upon it without mutual understanding.

This is the state of new digital media. Still young and confused, and trying to find its own way in the world, needing guidance and encouragement, without having seemingly arbitrary rules and regulations thrust upon it. I think I have pushed that particular analogy far enough.

The new media category, which is primarily recognized today as interactive multimedia, has raised thorny issues because it does not neatly fit into any of the preexisting categories. A single CD-ROM--or, Compact Disk--Read Only Memory--can contain elements from all of these established categories, and yet it is something wholly different. How we treat these products is not a matter of changing law, but a matter of defining the product and the business plan before the product reaches the market. This requires an understanding of law, business relationships and market forces in order to successfully navigate and negotiate these waters.

Current business practices in the entertainment and media industries are long established, and based on particular cultures, languages and deals. Digital multi-media, almost by definition, falls in the legal and structural gray area between the four different media publishing groups I just named. Each has standard operating procedures that are peculiar to itself, and often downright offensive to the others.

For example, to the film industry, pre-selling the distribution rights to a movie (maybe months before the movie is finished) is the way business is done. To the software industry, a product that is unfinished is known as "vapor-ware" and no distributor would ever pay for an unfinished product.

Another example, more directly related to the topic at hand: computer software is not sold, but is traditionally licensed to a single individual for use on a particular machine. Since it is not sold, per se, it is under certain marketplace restrictions: it is not covered under the first sale doctrine and therefore, unlike a book or a video tape, cannot be rented or loaned.

Why is computer software licensed and not sold? The answer dates back to when hardware and software were distributed as bundled packages for a single particular purpose, be it accounting or publishing or what have you. Even if you sold the hardware to someone else (much in the same way you could sell a car) that new owner was required to go back to the manufacturer to re-license the software. The software was seen as something intangible (which it was) and therefore needed extra protection against misuse.

This is a model which has begun to crumble as personal computers became prevalent. PCs are general purpose tools: you could operate any program for any application; the platform is not bound to a particular task.

Yet this practice has survived. Every time you tear open a new software package, you are agreeing to the terms of the licensing agreement, which prohibits the licensee from using that software on more than one computer (including computer networks), renting, leasing, sub-licensing or lending. In a nod to the demands of the consumer, however, very few pieces of computer software are copy protected, and express permission to copy a piece of software onto both a home and office machine is usually granted.

But many producers and distributors in the multimedia software industry are treating their products as computer programs. Why? Just because it comes on a disk--for that matter, just because you play it back on a computer doesn't mean that it must be treated as a computer program under the law. The legacy of computer software licensing is that multimedia publishers, as a matter of course, treat their content like computer software without realizing the implications of their actions.

(I would like to refer you to the current issue of the Seybold newsletter, Digital Media, which has an article examining in depth the question of renting multimedia titles.)

Securing the rights to all of the elements in a multimedia title is already an extremely difficult and confusing process, due in large part to the different societal relationships and practices to which I referred earlier. A single product could require the agreements of authors, actors, writers, directors, musicians, composers and the newest potential author: the programmer. Each would like to think that his or her participation would follow the practices with which they are currently familiar.

Let's take, for example, an interactive movie that is under production. The movie will play back on the new 3D0 Interactive Multiplayer (which will be released later in the year). The movie is scripted, cast and shot and then all of the elements are digitized. It is also programmed, so that the user at home can control how he or she chooses to follow the action. It is distributed on a compact disk. I could even further confound the issue and say that same compact disk would be compatible with a Macintosh computer, allowing you to get almost the same experience on a PC that you do on a television set.

What do you call this product? How do you compensate your actors and writers? Are there performance fees involved? These are not issues that require examination of copyright law, but an examination of the business practices of the film and video industry.

For the owners of copyrights, the key to successfully exploiting those rights is the understanding that you call the shots: the control of copyright is your leverage to make the best deal. Determine your market and marketing strategies, determine your business plan, and then determine the legal and business structures you wish to operate under, whether it is that of the book publishing world or the film and video world or the computer software world.

Standards and practices will be set, based upon established relationships, that is: the unions and guilds will require payments and recognition based upon contractual agreements already in force. Obviously, this will only occur when the market for digital media products is large enough that support of the unions and guilds is not prohibitively expensive to the producer. Small, entrepreneurial companies are disinclined to sign onto union contracts at this stage of market development.

Yet this is where many of the most significant changes in intellectual property and copyright may occur: in the relationships between the artists and their representatives and guilds on the one side, and producers and copyright holders on the other. Performance and re-use fees and questions of authors' rights will have to be resolved in order for this emerging industry to grow with both established and new talents participating.

Even within these existing relationships, you will find numerous unresolved issues such as the continuing strife between the Screen Actors Guild and the America Federation of Television and Radio Artists over who has jurisdiction when an actor is recorded digitally. But this is beyond the scope of today's presentation.

I return again to the concept of the separation of content from carrier. The products that are under discussion here at this Symposium are independent of a physical medium, and therefore should be defined by what they do, rather than on what they are produced or how they are displayed.

We have confused ourselves by continuing to rely on a physical medium to make our legal and business determinations. Instead, we should think about what we are creating, selling and protecting--and create our business plans and legal determinations around that.

In the near term, more and more information will be published on CD-ROM. Ultimately, it may all come off a satellite. We need to structure our relationships between publisher and author in a way that satisfies everyone for the particular needs of the property.

Personally, I believe that the model that most new media titles will follow will be that of the film industry, which already deals with multiple media in a single product. For the computer industry, however, this will cause a certain amount of upheaval that cannot be ignored. Software vendors and dealers do not understand marketing and distribution in the world of film and video. Neither do software engineers. And just as the computer industry needs the artists and story tellers from the creative and fine arts, so do artists need the engineers, programmers and scientists from the technological arts in order to succeed. There must be changes, but those will come from negotiations between interested parties, and not legal restructuring.

We need to regard all authors, whether of music, text, or computer code, in a manner that is fair and just and right--regardless of the medium on which they create. We must find ways to compensate and protect these individuals for their work without putting undo burdens on the consumer. This is possible, but it will take the combined creative efforts of many people, including the business and legal community, in order to make it successful.

Thank you for your time, and I look forward to the discussion which will follow.

**COPYRIGHT AND TECHNOLOGY:
THE ANALOG, THE DIGITAL, AND THE ANALOGY**

by

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Introduction

What's past is prologue. That's what Antonio said in "The Tempest."¹ That was true in Shakespeare's day, and it's true today. The role of copyright in digital technology is new, but hardly without antecedents. And, in the tradition of the law, to look to the future we also have to look back the other way, Janus-like, at the antecedents.

When the medieval monks massaged the database modules in their manuscripts, they didn't have much need for copyright. But as successive generations of commentators have reminded us,² technology evolves and, with it, communications, the marketplace and the copyright law.

Has the copyright system's adaptation to changes in technology been perfect?³ The answer to such a straw-man inquiry must of course be: no. Copyright doesn't provide all the bright-line distinctions that some people yearn for, and it doesn't give easy answers to difficult questions. Consider, for example, the elusiveness of the quest for a definitive line to mark the idea-expression dichotomy, or the continuing efforts of U.S. courts to grapple with the century-and-a-half-old doctrine of fair use--including the U.S. Supreme Court which recently decided to hear another case on the subject.⁴ But copyright has adapted to changes in technology with no more imperfections than any other jurisprudence.

Indeed, copyright can be viewed as the child of technology--Gutenberg's, to begin with.⁵ If Gutenberg had never invented his printing press there may never have been the need for copyright--nor the opportunity for mass communication and widespread dissemination of works of authorship.⁶

The innovative lawmakers who faced their days' challenge of a new technology gave us copyright based on the principle of exclusive rights for authors' expression. Whether initially by accident or by design, this means of protecting works of authorship has promoted authorship and provided a vast array of works to the public for centuries. Subsequent technological advances have left the core tenets of copyright essentially undisturbed, including the basic conceptual unity of all forms and embodiments of expression.

With each technological advance some have sought to emphasize differences between "traditional works" and new modes or embodiments of expression. These differences, they argue, demand different legal solutions. Some critics of copyright jurisprudence say: it may work in practice, but does it work in theory? Even though the similarities among different modes of expression have far outweighed their differences, the new solutions (to be devised) are proposed to replace long-established copyright principles. The "solutions" have usually been rigid regimes custom-tailored--but ill-suited--to particular technologies and to intellectual property policy and practice. Nonetheless, copyright has continued to evolve to embrace technological change.

Now, we again face technological change--almost daily. The cluster of ubiquitous⁷ technologies we know as "digital technology" has brought with it new challenges and new opportunities. But, we've been here before: not just with the printing press, but with other evolutions such as the camera, the player piano, the radio, the television, the photocopier--and on and on. Again, the same philosophical choice presents itself: do we focus on the differences or the similarities?

The answer should be: the similarities. The continuity of authorship and expression should guide us today as in the past. "[F]rom its beginning, the law of copyright has developed in response to significant changes in technology."⁸ Without deviation from its basic tenets, copyright can and should embrace old and new expression in digital form. This is not to say that the differences have no significance whatsoever. For example, as the WIPO Secretariat has recognized in its Questions Concerning a Possible Protocol to the Berne Convention, Part II,⁹ digital technology raises questions as to how authors may enforce their rights. The answers to these questions, in turn, relate to other questions, such as the administration of rights.

I. Challenges that digital technology pose to the current IP structure

Digital technology presents both opportunities and challenges. Should its challenges overwhelm existing IP regimes? No. In this section, we'll examine some of the challenges and indicate why we don't believe they threaten the current system and why we believe the system can accommodate them. In Part III, we'll discuss examples of possible approaches to dealing with the challenges.

A. The categories of authorship have broken down

By definition, works in digital form are embodied as just ones and zeros. A "one" or a "zero" for a categorically distinct work, such as a literary work, is no different than a "one" or a "zero" for any other categorically distinct work, such as a musical work. They can be stored in the same medium in digital form, and they can be combined in new ways to create multimedia works that defy simple categorization. Consumers can already acquire works on CD-ROM that combine text, sound, still and motion pictures, along with all the necessary software to "read" them.¹⁰ In essence, we have a convergence of categories of authorship in digital form.

These are new opportunities to transcend the bounds of traditional works. That's a boon to innovative authors, but troubling to some lawyers and commentators.¹¹ Perhaps the legal profession has a need to pigeonhole the artifacts of digital (and analog) technology into neat categories. In short, we're talking about the advent of authorship that flouts facile categorization, and some are deeply disquieted by it.

Yet, as we said earlier, we've been here before. Overlapping categories of authorship are not unique to works in digital form. Illustrated books--those old Gutenberg creations--contain both text and pictures. Even an old 78 r.p.m. phonograph record may embody a phonogram, or sound recording, and a musical composition, and the latter itself may be comprised of a poem (lyrics) and music. Audiovisual works such as cinematographic works, or motion pictures, of course contain images and sound, comprised of music and text. The motion picture film or tape may itself be the embodiment of many works and their derivatives. A fairly common example is a motion picture based on a musical play, based in turn on a dramatic composition, based in turn on a novel, based on a short story. And, to stir the mix even further--but, again, by no means beyond common experience in the industry--consider the common use in a motion picture of a still photograph, a painting or drawing. Traditional copyright doctrines and contractual concepts already have addressed these issues, without the need for radical new legislation.

B. Digital technology concentrates the value of works

Digital storage is dense, and gets more so every year. An entire encyclopedia can now be distributed on a single CD-ROM. As the technologies of storage and data compression develop further, smaller and smaller media will store greater and greater amounts of material, and provide much greater value to users and cost savings to creators and disseminators. The density of digital storage also raises the stakes in creators' continuing battle against unauthorized copying--from piracy for profit to copying for convenience.

That digital technology has this physical property, however, doesn't require us to discard our system of intellectual property. Rather, it underscores the continuing need for effective IP protection that's always been a goal. Moreover, there have long been works that are intrinsically of high value. This is nothing new to digital works. Paintings, motion pictures and works of the theater are but a few of the traditional works that may be valued in the millions of dollars. Newer works of similar value may be computer programs or databases. Nonetheless, for all works, old and new, the essence of the intellectual property questions remains unchanged.

C. Digital technology makes reproduction easier

Works in digital form can be reproduced nearly instantaneously, with 100% accuracy, and with minimal effort or expense. This facilitates reproduction--both authorized and unauthorized--and is thus both a boon and a bane to authors, publishers and other producers.

Since technology has eliminated the technical barriers to creating perfect reproductions, we must consider the advantages and disadvantages of also using technical barriers (i.e., copy protection) to bar unauthorized access and use.¹² But, with or without the use of such equipment restrictions, effective copyright protection remains critically important in protecting the investment in authors' creativity.

Society introduced copyright because a new technology made it easier to reproduce the written word. The challenge of digital technology is no different in kind than the challenge of the print technology for which copyright was first developed.

D. Digital technology makes distribution easier

As a general rule, any work in digital form that can be reproduced in a few moments on a desktop computer can also be reproduced in the same time half a world away. Computer networks such as the Internet¹³ or the proposed National Research and Education Network ("NREN")¹⁴ can make works available almost instantly to millions of people around the world.

Again, this phenomenon presents both opportunities and challenges. Digital transmission of works can be faster and cheaper than distribution by traditional means. Publishers of "shareware"¹⁵ software have long distributed their works electronically, bypassing traditional retail distribution channels and eliminating the manufacturing, printing and transportation costs for program disks and printed documentation. Some commercial vendors distribute programs to their largest customers electronically, and make "bug fixes" (corrections of programming errors) available to the general public on commercial bulletin board services such as Prodigy or CompuServe, or via the Internet.

The other side of this opportunity is the risk that people who are not authorized can just as easily distribute copies of works to a vast audience.¹⁶ It is still exceptional to find bulletin board services that have mechanisms to enforce IP rights and insure proper collection and distribution of royalties.¹⁷ Even if the initial distribution of copies is lawful, it's virtually impossible to control their redistribution. On a network as vast as Internet, for example, a work in digital form can propagate to thousands of sites throughout the world in a matter of hours.

As with ease of reproduction, ease of widespread distribution is a characteristic of works in digital form that differs in degree but not in kind from other embodiments of works. For copyright, the challenge is incremental, not fundamental.

II. Authorship and expression: the common thread

About 2,500 years ago, Heraclitus said that "nothing endures but change." That observation certainly holds for the technologies that mankind has developed to express itself. Copyright was a response to technological change, and has continually adapted to change--usually successfully.¹⁸ Let's take a look at some instances where U.S. copyright has adapted successfully, as well as some where mistakes were made.

A. Copyright has adapted successfully to technologies in the past

1. Photography

Photography had its early beginnings in the 1820s and 1830s. It came into widespread use by the latter part of the 19th century, creating new avenues for expression and dissemination. For example, during the American Civil War (1861-1865), the photographs of Matthew Brady had a tremendous impact on the public imagination. But these new avenues could be travelled by the uninvited--the infringers--as well as by the original photographers. For that reason, the U.S. Congress amended the copyright law in 1865 to include photographs (and photographic negatives) as copyrightable subject matter.¹⁹

Nonetheless, the issue of copyright protection for photographic works was still unsettled 18 years later, when a defendant argued to the U.S. Supreme Court that this protection was beyond the power of Congress under the U.S. Constitution to "promote the Progress of Science ... by securing for limited Times to Authors ... the exclusive Right to their respective Writings."²⁰ The defendant argued that copyright could not protect photographs, because "a photograph being a reproduction on paper of the exact features of some natural object or of some person, is not a writing of which the producer is the author."²¹

The Court rejected this argument. It noted that other forms of expression not generally regarded as "writings"²² (as the word is used other than by U.S. copyright lawyers) had been protected since the first U.S. Copyright Act, enacted in 1790 by a Congress that included many of the drafters of the Constitution.²³ The Court held that the U.S. Constitution took a broader view of authors and authorship than did the defendant:

An author in that sense is "he to whom anything owes its origin; originator; one who completes a work of science or literature." So, also, no one would now claim that the word writing in this clause of the Constitution, though the only word used as to subjects in regard to which authors are to be secured, is limited to the actual script of the author, and excludes books and all other printed matter. By writings in that clause is meant the literary productions of those authors, and Congress very properly has declared these to include all forms of writing, printing, engraving, etching, &c., by which the ideas in the mind of the author are given visible expression.²⁴

The Court did not answer the question at what point a photograph is sufficiently original to merit copyright protection. The photograph before it was a "'useful, new, harmonious, characteristic, and graceful picture'" that the plaintiff had made

'entirely from his own original mental conception, to which he gave visible form by posing ... Oscar Wilde in front of the camera, selecting and arranging the costume, draperies, and other various accessories in said photograph, arranging the subject so as to present graceful outlines, arranging and disposing the light and shade, suggesting and evoking the desired expression, and from such disposition, arrangement, or representation, made entirely by plaintiff, he produced the picture in suit.'²⁵

In 1921, Judge Learned Hand wrote that "no photograph, however simple, can be unaffected by the personal influence of the author, and no two will be absolutely alike,"²⁶ effectively ensuring that photographs fall within the scope of copyright protection. And, no doubt, influenced in part by the legal protection afforded to the medium, photography has flourished as an art form, as a pastime and as a vital means of commercial expression.

But the U.S. outcome was not inevitable. Through the latter half of the 19th century, and well into the 20th, Berne members differed on what type of protection was appropriate for photographs. Indeed, the division within the Berne Union persisted for more than 60 years, with the result that photographs were not enumerated in Article 2(1) of the Berne Convention for the Protection of Literary and Artistic Works ("Berne") until the Brussels Revision in 1948.²⁷

2. Computer programs

When computer programs came on the scene as works distinct from computer hardware, they, like photographs, appeared to be a new form of authorship in a new medium of expression. But, as had happened with photographs, they were soon embraced by the protection of copyright law.

The U.S. Copyright Office first accepted computer programs for registration in 1964 under the 1909 Copyright Act.²⁸ With the passage of the 1976 Copyright Act, Congress confirmed that programs were literary works, to be protected as such under the copyright law.²⁹ The U.S. established a Presidential commission in 1975 to study the impact of certain new technologies on the copyright law and to make recommendations to the President and the Congress.³⁰ That commission, the National Commission on New Technological Uses of Copyrighted Works ("CONTU"), studied the forms of protection for software for several years, and it confirmed that protection under copyright was appropriate.³¹ CONTU's only recommendations for change in existing copyright law were to add a definition of "computer program" and to enact certain extremely limited exceptions to a copyright owner's exclusive rights.³²

The jurisprudence of copyright protection for software has developed rapidly over the past decade, but the core principles are well-established: copyright protection subsists in all types of programs--from microcode³³ to operating systems³⁴ to applications³⁵--regardless of the physical medium in which they are embodied, and regardless of whether they are expressed in human-readable source code or machine-readable object code.³⁶ Copyright protects both literal and nonliteral expression in programs,³⁷ including aspects of a program's user interface.³⁸ The courts continue to explore and define the scope of protectible expression in computer programs, but these principles are generally accepted as part of U.S. copyright law.³⁹

B. Learning from past mistakes

The U.S. copyright law has not been so successful in adapting to all changing technologies. The failure of Congress to recognize the need to protect sound recordings left that form of expression largely unprotected for generations--from the days of the piano roll to almost the dawn of the digital compact disk. In the more recent case of semiconductor chip topographies, Congress made another mistake in enacting sui generis legislation instead of embracing that subject matter within the copyright law. The result has been a scheme of protection obsolete almost before the ink was dry on the statute.

1. Sound recordings

In 1908, the U.S. Supreme Court determined in White-Smith Music Publishing Co. v. Apollo Co.,⁴⁰ that the perforated paper music rolls that played a sequence of recorded notes on a player piano were not "copies" under the copyright law of the time.⁴¹ Following the reasoning of lower court decisions on piano rolls and phonograph records (another new technology), the Court found that the music roll was not a "copy," because it was not in "intelligible notation."⁴² Consequently, the manufacturer of the music rolls had no liability to the owner of the copyright in the underlying musical work.

Although the holding of White-Smith was limited to the question whether a music roll constituted a copy of the musical work it embodied, the decision--coupled with Congressional inaction--foreclosed statutory copyright protection for sound recordings for more than 60 years.⁴³

2. Semiconductor chip topography

The intricate designs of the circuitry on a microchip became an important form of expression by the late 1970s. These layouts, embodied in the masks used in the photolithographic and other fabrication processes, are difficult to design, requiring skill and creativity to prepare. But they are easy to copy--a contrast that becomes more and more true of copyrighted works as digital technology advances.

In the legislative proceedings leading to the U.S. enactment of the Semiconductor Chip Protection Act of 1984 ("SCPA")⁴⁴, there was much discussion of the ways in which the expression in semiconductor chip layout design ("mask works") was similar to the expression in other works, and much discussion of the ways in which they differed. The initial focus was on similarities, with a proposal to bring mask works under the copyright law. But the focus then shifted to the differences, and sui generis legislation was ultimately adopted. We submit this was a mistake.⁴⁵

That statute is flawed in a number of respects. Congress's compromise on "reverse engineering"⁴⁶ has proved to be an exception that swallows the rule, now that commercial research firms can "peel" chips easily and at a minor fraction of the cost of developing an innovative chip design.⁴⁷ Moreover, technological advances quickly rendered obsolete the definitions that determine the scope of the law. The law does not protect devices like thin film recording heads and flat panel displays, that are produced by essentially the same methods as semiconductor chips: they just don't seem to fit within the definitions.⁴⁸ Current research may yield devices that could replace some semiconductor chips, but these new devices may also not be protected under the Act.

Perhaps the worst failing of the SCPA is that it lacks a workable basis for international protection. In major part, that failing could have been foreseen from the decision to adopt a sui generis statute rather than extending copyright to cover this form of expression.⁴⁹ That decision foreclosed the possibility that chip protection could be assimilated into the existing international framework under Berne and the Universal Copyright Convention ("UCC").⁵⁰ Instead the world community had to develop a sui generis treaty for sui generis protection.

It was therefore necessary for the negotiations that led to the 1989 Washington Treaty on Intellectual Property in Respect of Integrated Circuits (the "Washington Treaty") to start from scratch, outside the Berne framework of strong protection to foster creativity. Notwithstanding the substantial efforts of the participants in the Diplomatic Conference and the WIPO Secretariat, the negotiations produced a flawed agreement for protection that was unacceptably weak in the eyes of the major chip-producing nations--the U.S., Japan and members of the European Community.⁵¹

Without a multilateral treaty providing acceptable protection for mask works, the SCPA has accomplished international protection solely by granting protection to foreign mask works on the basis of reciprocity.⁵² This method has secured protection for U.S. mask works in more than a dozen countries, and has extended U.S. protection to mask works from those same countries. In putting an uncustomary reliance on reciprocity, though, the U.S. strayed from a core principle of Berne: the principle of national treatment under Article 5(1). Others have sought to excuse their own derelictions by that of the U.S. For example, if the EC's proposed Directive on databases⁵³ is representative, other governments and intergovernmental entities may well follow the folly of the U.S., with the consequence that reciprocity, rather than national treatment, will become the primary basis for international IP protection--and its erosion.

III. Some possible future approaches

While the challenges of digital technology don't necessitate discarding the principles of copyright, they do require us to examine the enforcement and administration of copyright rights. We'll mention examples of some of the approaches that have been used or suggested in this connection.

A. The rental right

One approach to deal with technologies that permit easy reproduction of works has been to give authors the exclusive right to control rental of copies of their works after the initial distribution.⁵⁴ The rental right is important (apart from any intrinsic value it may have) because unauthorized rental of works that are easily copied is an open avenue for piracy.⁵⁵

In the U.S., the rental right was first extended to authors of sound recordings.⁵⁶ The Computer Software Rental Amendments Act of 1990⁵⁷ extended the same right to authors of computer programs.

The U.S. adopted the rental right because the ease of unauthorized duplication made it necessary to restrict the availability of copies that could be duplicated. Congress granted the rental right to sound recordings because they are vulnerable to easy, cheap, and highly accurate reproduction, even on analog machines.⁵⁸ Computer programs are equally easy prey.⁵⁹ The rental right, however, for sound recordings is not limited to digital formats, or indeed to works embodied in any particular medium.

The European Community, in harmonizing the IP laws of its member states, has adopted a Council Directive on rental rights.⁶⁰ Prior to that, the EC Software Directive established a rental right for computer programs.⁶¹ More generally, international support is growing for adoption of rental rights, especially as an exclusive right rather than a mere right to receive equitable remuneration: witness the WIPO Secretariat's proposals of a rental right and the discussions of the Committees of Experts on the draft model copyright law and on a possible Berne Protocol.⁶²

B. Collective administration of rights

The growth of voluntary reproduction rights organizations ("RROs")⁶³ has been a positive and promising response to widespread unauthorized reprographic reproduction of copyrighted material. RROs permit users the convenience of making photocopies without violating copyright law. For copyright owners they are a valuable source of royalty income. That source would otherwise be lost because it is so difficult and expensive to administer a morass of ad hoc permissions to a diffuse user community or otherwise to enforce copyrights against a plethora of individual unauthorized reprographic uses. Moreover, the transaction costs are vastly lower than for negotiating individual licenses, thus benefitting both rightholder and user.

Many of the policy factors pertinent to photocopying are also relevant to digital technology: widely available means of reproduction; diffuse user community; high cost of enforcing rights against infringers; and high transaction costs for negotiating individual licenses. In some circumstances, it may be beneficial to foster voluntary organizations similar to the RROs to administer collectively the rights of all participating authors.⁶⁴ The WIPO Secretariat has proposed this possibility in the context of the Berne Protocol discussions. The approach might be appropriate, for example, in some fields of electronic publishing.

Consideration should also be given to the possibility of forming similar voluntary organizations to clear the necessary rights for the underlying materials that multimedia authors seek to incorporate into their works.⁶⁵ The efficacy of this approach would depend, in part, on the degree to which rightholders in the underlying works can be assured that they will not lose any necessary control of their works once the works enter (or re-enter) the marketplace in digital form.

C. Technology may help in meeting the challenge of technology

A hotly disputed issue in recent years has been determining the appropriate means to counter the negative aspects of the impact of digital recording technology on the sound recording industry. Already beset by substantial losses to piracy and home copying of analog phonorecords, the record industry was concerned that retail sales of digital audio recording equipment would produce vast quantities of perfect--but unauthorized--reproductions of digital audio tapes and compact discs.

In the U.S., prolonged negotiations between the record industry and manufacturers of home digital audio recorders resulted in a compromise that included both regulatory and technological elements. The regulatory aspect was a levy, for the benefit of rightsholders, on blank media and digital audio recorders destined for home use.⁶⁶ The technological aspect was the requirement that those devices must contain a serial copy management system ("SCMS") that prevents a user from making serial, or multi-generational,⁶⁷ copies of digital recordings.⁶⁸ The U.S. enacted the compromise into law as the Audio Home Recording Act of 1992.⁶⁹

Other technological means can be used to prevent or regulate the copying of works in digital form. Among them are techniques to enable software that searches for material and retrieves it to check whether the user has a valid license to do what the user wants to do. One example is Gopher, a computer program that enables a user to locate, access and retrieve resources on the Internet using a simple menu-driven user interface. Gopher is smart enough to know whether a user has a license that authorizes access or retrieval of particular resources.⁷⁰ Similar capabilities have been proposed for "knowbots," a new kind of "smart" search and retrieval program.⁷¹ "Smartcards" could also be used to permit users to carry their license information with them and to permit automation of royalty payments.⁷²

Moreover, software and databases can be devised to facilitate generally the identification of works, of rightsovers and of users. These and other technologies could go well beyond mere copy prevention schemes toward a system of convenient access to works in digital form, while assuring efficient collection and distribution of royalties.

Conclusion

Copyright came into existence because of a technological challenge: Gutenberg's printing press made it too easy to disseminate--and to steal--the fruits of authors' creative labors. Lawmakers have long since recognized that authorship and expression have value to society. The best way to assure this benefit is to protect authors' exclusive rights in their expression as an incentive to create their works. These are the enduring principles of copyright.

To paraphrase George Santayana, those who ignore the teachings of history are doomed to repeat its mistakes. It is equally true that those who read their history must be careful not to make their own mistakes. As we look at proposed solutions, we must remind ourselves of what has gone before, and yet we must be daring--even if that means having the courage to be cautious. In the words of Hamlet, we should "rather bear those ills we have than fly to others that we know not of."⁷³

In the centuries since Gutenberg's invention, technology has expanded authors' means of expressing themselves and disseminating that expression. To the demands of a particular technology, the law has generally responded by protecting new works and embracing new media. But the principles remain. We believe it will be so with the technological challenge of our day.

NOTES

1 William Shakespeare, *The Tempest*, Act II, Scene 1.

2 Augustine Birrell, *Seven Lectures on the Law and History of Copyright in Books* 195 (1899). "[T]he course of events[] have carried us an immense distance from our old moorings." *Id.* at 206.

"The Congressional authors of the Copyright Act of 1909 could not, of course, foresee the enormous growth of novel techniques of communication and entertainment which was to take place in the half-century succeeding the enactment of their statute." John F. Whicher, *The Creative Arts and the Judicial Process* 3 (1965).

"Originally, copyright law was concerned with the field of literature and the arts but, in seeking, in particular, to keep up with advances in technology, the protection given by copyright law has been considerably expanded over the years." E.P. Skone James, et al., *Copinger and Skone James on Copyright* para. 1-1 (13th ed. 1991).

See also Benjamin Kaplan, *An Unhurried View of Copyright* 1 (1967).

3 One commentator described the appropriate context for evaluating what some perceive as imperfections in the copyright system:

It is, unfortunately, necessary to say to the theorists of every school that no body of human law can ever hope to attain the beautiful consistency of anyone's idea of absolute perfection, and, if it could, there would be no living with it for the rest of us. Only in the topsy-turvy world of a Gilbert and Sullivan opera is it possible for even the most highly susceptible jurist to assert that:

"The law is the true embodiment of everything that's excellent."

Whicher, *supra* note 2, at 3. Or, to put it another way, even the Ten Commandments have on more than one occasion required interpretation.

4 Campbell v. Acuff-Rose Music, Inc., 113 S. Ct. 1642 (1993) (grant of certiorari).

5 Professor Benjamin Kaplan of Harvard Law School (later, Justice of the Supreme Judicial Court of Massachusetts) described appropriately the critical role of Gutenberg in discussions such as these:

As a veteran listener at many lectures by copyright specialists over the past decade, I know it is almost obligatory for a speaker to begin by invoking the "communications revolution" of our time, then to pronounce upon the inadequacies of the present copyright act, and finally to encourage all hands to cooperate in getting a Revision Bill passed. But as I wish not so much to keep the specialists bemused as to introduce the intelligent general lawyer to the law and mystique of copyright, I think I should begin at an earlier point--the Gutenberg revolution, which started it all.

Kaplan, *supra* note 2, at 1.

- 6 The subsequent history of copyright and technology illustrates the close relationship between the two. See, e.g., Birrell, *supra* note 2, at 1-164; Eaton S. Drone, *A Treatise on the Law of Property: Intellectual Productions in Great Britain and the United States* 2-96 (1879); Kaplan, *supra* note 2, at 1-37; Ralph Oman, *The Copyright Clause: A Charter for a Living People*, in *Celebrating the Bicentennial of the United States Constitution* 85-98 (1988); Sam Ricketson, *The Berne Convention for the Protection of Literary and Artistic Works: 1886-1986*, paras. 1.1-1.19 (1987); Barbara Ringer, *Two Hundred Years of American Copyright Law*, in *Two Hundred Years of English and American Patent, Trademark and Copyright Law* 117-136 (1977); Skone James, *supra* note 2, at paras. 1-1-1-50; Stephen M. Stewart and Hamish Sandison, *International Copyright and Neighboring Rights*, paras. 2.01-2.27 (2d ed. 1989). The entirety of that history is, of course, beyond the scope of this paper.
- 7 For example, this paper, as well as most--and possibly all--of the papers presented at this Symposium, was first fixed in digital form.
- 8 Sony Corp. v. Universal City Studios, Inc., 464 U.S. 417, 430 (1984).
- 9 Questions Concerning a Possible Protocol to the Berne Convention, Part II (Memorandum Prepared by the International Bureau for Committee of Experts on a Possible Protocol to the Berne Convention for the Protection of Literary and Artistic Works, 1st Sess.), Doc. No. BCP/CE/I/3 (1991) ("Part II Protocol Memorandum").
- 10 See, e.g., John A. Adam, *Interactive Multimedia*, *IEEE Spectrum*, March 1993, at 22, 23; Caryn James, *Look, Ma, I'm an Auteur!*, *N.Y. Times*, Feb. 7, 1993, Sec. 2 (Arts & Leisure), at 13.
- 11 See, e.g., Office of Technology Assessment, *Finding a Balance: Computer Software, Intellectual Property and the Challenge of Technological Change* 172-73 (1992); Pamela Samuelson, *Digital Media and the Changing Face of Intellectual Property Law*, 16 *Rutgers Computer & Tech. L.J.* 323, 332-34 (1990).
- 12 See section III.C, *infra*.
- 13 The Internet is a network of computer networks. It is currently made up of more than 8,000 networks, has more than 1.3 million connected computers and about 8 million users in more than 40 countries. John S. Quarterman, *In Depth: The Internet*, *Computerworld*, Feb. 22, 1993, at 81.
- 14 NREN is slated to replace NSFNET, the current backbone of the Internet in the U.S. Dubbed an "information superhighway," see, e.g., *Information Superhighways*, *Fin. Times*, March 16, 1993, at 12, it will be more than 40 times faster than NSFNET, and is scheduled to be in operation by 1996. *Internet--Policy Recommendations*, *Information Industry Bulletin*, Nov. 5, 1992, at 4. Like NSFNET, NREN will be only a part of the larger Internet. Quarterman, *supra* note 13, at 83 (Sidebar: *Internet Misconceptions*). The NREN initiative was established by the High Performance Computing Act of 1991, Pub. L. No. 102-194, 105 Stat. 1594 (1991).

- 15 Shareware programs are usually distributed through bulletin boards or similar means, or by disk exchanges and the like. Typically, they are subject to a license that allows the user a free trial period to test the software. After the trial period, the user is expected to register the program and make a payment.
- 16 A number of electronic bulletin boards--small by comparison to the vast overall number of bulletin boards--exist for the purpose of distributing pirated software or for other illegal purposes. Policing them is a daunting task for industry and law enforcement officials. See, e.g., Ralph Blumenthal, *Going Undercover in the Computer Underworld*, N.Y. Times, Jan. 26, 1993, at B1 col. 2; John Markoff, *Though Illegal, Copied Software Is Now Common*, N.Y. Times, July 27, 1992, at A1 col. 1. These activities, together with public access to vast amounts of information generally, also raise concerns in areas other than copyright. Individual privacy and security of sensitive data are issues presently being addressed by government, industry, civil libertarians and others.
- 17 The U.S. government and the private sector are studying these issues in connection with NREN. See, e.g., Task Force to Respond to December Report of White House Office of Science and Technology Policy, *Policy Matters!* (Information Industry Association Newsletter), March 1993, at 4. Proposals to create digital libraries, such as the Information Infrastructure and Technology Act of 1992, and the Library of Congress initiatives to provide public access to deposit copies of works on CD-ROM raise similar questions. See, e.g., John F. Baker, *Outlook 93: Anxieties & Openings*, Publishers' Weekly, Jan. 4, 1993, at 40-41; Karen DeWitt, *The Nation's Library For A Fee And A Modem*, N.Y. Times, February 28, 1993, Sec. 4 (Week in Review), at 16; Jean Armour Polly, *NREN for All: Insurmountable Opportunity*, Library J., February 1, 1993, at 38-41.
- 18 See, e.g., Sony, 464 U.S. at 430 n.11; H.R. Rep No. 1476, 94th Cong., 2d Sess. 51-52 (1976) ("House Report"). See also supra notes 2-6.
- 19 13 Stat. 540 (1865).
- 20 U.S. Const., Art. I, Sec. 8, cl. 8.
- 21 Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53, 56 (1883).
- 22 The present U.S. Copyright Act has eschewed the term "writings" in favor of "original works of authorship." The latter term may be broader than "writings" as used in earlier Acts, but is not co-extensive with Congress's power under the copyright clause of the Constitution. House Report at 51.
- 23 111 U.S. at 57.
- 24 *Id.* at 57-58 (citation omitted).
- 25 *Id.* at 60 (quoting decision below).
- 26 Jeweler's Circular Pub. Co. v. Keystone Pub. Co., 274 F. 932, 934 (S.D.N.Y. 1921) (L. Hand, J.), *aff'd on other grounds*, 281 F. 83 (2d Cir. 1922).

- 27 Ricketson, *supra* note 6, at 257-66 (1986). Photographic works are still subject to a shorter minimum term of protection under Berne than other categories of works. Art. 7(4). Providing photographic works with the same minimum term as other works is one of the proposals of the WIPO Secretariat for inclusion in a possible protocol to Berne. Part II Protocol Memorandum paras. 162-63; Report of Committee of Experts on a Possible Protocol to the Berne Convention for the Protection of Literary and Artistic Works, 2d Sess., Doc. No. BCP/CE/II/1 paras. 157, 160 (1992) ("Report of 2d Protocol Session").
- 28 Final Report of the National Commission on New Technological Uses of Copyrighted Works ("CONTU Report"), 15 (1978).
- 29 House Report at 51, 54.
- 30 Pub. L. No. 93-573, 88 Stat. 1873 (1974).
- 31 CONTU Report, at 11-12. The other technologies addressed by CONTU were electronic databases and photocopying.
- 32 *Id.* at 12. With slight modification the recommendations were adopted in the Computer Software Amendments of 1980, Pub. L. No. 96-517, 94 Stat. 3015, 3028. "Computer program" was defined in section 101 as "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result." The exceptions to a copyright owner's exclusive rights permit the outright owner of a copy, under limited circumstances, to make an adaptation or an archival copy of a program and to copy a program in the course of executing it in a machine. The exceptions were codified as 17 U.S.C. Sec. 117, which superseded an interim provision relating to the use of copyrightable works in a computer.
- 33 NEC Corp. v. Intel Corp., 10 U.S.P.Q.2d (BNA) 1177 (N.D. Cal. 1989).
- 34 Apple Computer, Inc. v. Formula International, Inc., 725 F.2d 521 (9th Cir. 1984); Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240 (3d Cir. 1983).
- 35 E.g., SAS Institute, Inc. v. S&H Computer Systems, Inc., 605 F. Supp. 816 (M.D. Tenn. 1985) (statistical analysis application). Artificial intelligence applications, including expert systems and their knowledge bases, are also encompassed by this protection. See, Morton David Goldberg and David O. Carson, Copyright Protection for Artificial Intelligence Systems, Doc. No. SAI/5 (1991) (paper presented at WIPO Worldwide Symposium on the Intellectual Property Aspects of Artificial Intelligence, Stanford University, March 25-27, 1991).
- 36 E.g., Apple v. Franklin, *supra* note 34.
- 37 E.g., Computer Associates Int'l, Inc. v. Altai, Inc., 982 F.2d 693 (2d Cir. 1992); Whelan Associates, Inc. v. Jaslow Dental Laboratory, Inc., 797 F.2d 1222 (3d Cir. 1986), cert. denied, 479 U.S. 1031 (1987).
- 38 E.g., Lotus Dev. Corp. v. Borland Int'l, Inc., 799 F. Supp. 203 (D. Mass. 1992); Digital Communications Associates, Inc. v. Softklone Distributing Corp., 659 F. Supp. 449 (N.D. Ga. 1987).

- 39 Internationally as well, there is growing consensus that computer programs are literary works, properly protected as such under copyright law. See, e.g., Council Directive on the Legal Protection of Computer Programs (91/250/EEC), 1991 O.J. (L122) 42; Questions Concerning a Possible Protocol to the Berne Convention, Part I (Memorandum Prepared by the International Bureau for Committee of Experts on a Possible Protocol to the Berne Convention for the Protection of Literary and Artistic Works, 1st Sess.), Doc. No. BCP/CE/I/2, para. 25 (1991) ("Part I Protocol Memorandum"); Report of Committee of Experts on a Possible Protocol to the Berne Convention for the Protection of Literary and Artistic Works, 1st Sess., Doc. No. BCP/CE/I/4, para. 73 (1991). Even some countries that historically have given software little or no protection have made substantial progress, and now protect computer programs under copyright. See, e.g., Morton David Goldberg and Jesse M. Feder, China's Intellectual Property Legislation, *The China Bus. Rev.*, Sept.-Oct. 1991, at 8-11.
- 40 209 U.S. 1 (1908).
- 41 *Id.* at 18.
- 42 *Id.* at 17. Under U.S. law now, the historical distinction between "copies" and "phonorecords" remains. However, the outcome in White-Smith would have been different under the present definition of "copies" as "material objects ... in which a work is fixed by any method now known or later developed, and from which the work can be perceived, reproduced or otherwise communicated, either directly or with the aid of a machine or device." 17 U.S.C. Sec. 101.
- 43 Congress did not protect sound recordings in the general copyright revision of 1909. Sound recordings were finally protected with the Sound Recording Amendment of 1971, Pub. L. No. 72-140, 85 Stat. 391 (1971).
- 44 17 U.S.C. Sec. 901 et seq.
- 45 See, Morton David Goldberg, Intellectual Property Rights and Technology--Semiconductor Chip Protection as a Case Study (Paper presented at the Conference on Global Dimensions of Intellectual Property Rights in Science and Technology, held at the National Academy of Sciences, Washington, D.C., January 8-9, 1992).
- 46 17 U.S.C. Sec. 906(a). The results of reverse engineering of chips can, with some amount of variation, be used in competing products since the right to prepare derivative works is not among the exclusive rights that the SCPA grants.
- Congress has never legislated specifically on the issue of the legality under copyright of decompilation, which is one form--the controversial form--of reverse engineering of computer programs.
- 47 For example, one company specializing in chip analysis advertises "off-the-shelf" chip reports in the range of \$1,000-\$2,000. (Advertising brochure is on file with the authors.)

- 48 These devices are not made out of a semiconductor material, so they don't fall within the rigid confines of the definition of a "semiconductor chip product" that receives protection under the SCPA. 17 U.S.C. Sec. 901(a)(1). As Professor Ben Kaplan wrote: "[S]olutions should not be so rigid as to deny the future; they should admit the variety and flux of experience and leave room for ready correction over time." Kaplan, *supra* note 2, at 124-25.
- 49 Congress explained its effort as an attempt to avoid "formidable philosophical, constitutional, legal and technical problems" associated with protecting an essentially utilitarian article under copyright. H.R. Rep. No. 781, 98th Cong., 2d Sess. 10 (1984).
- 50 Congress saw substantial difficulties in assimilating mask works under Berne or the UCC, *id.* at 7-8, but apparently underestimated the difficulty of constructing a new international regime of protection. Moreover, it did not consider the damaging precedential effect of premising international protection on the principle of reciprocity rather than national treatment.
- 51 The Washington Treaty has not entered into force. As of January 1, 1993, it had been signed only by China, Egypt, Ghana, Guatemala, India, Liberia, Yugoslavia and Zambia, and ratified only by Egypt. 29 Copyright (WIPO) 11 (1993).
- 52 17 U.S.C. Sec. 914. Section 914 is a temporary "interim" provision that is currently set to expire in 1995. The President can grant reciprocity on a permanent basis under Sec. 902(a)(2), but has never done so.
- 53 Proposal for a Council Directive on the Legal Protection of Databases, 1992 O.J. (C 156) 92.
- 54 See, e.g., 17 U.S.C. Sec. 109(b); Agreement on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods (Annex III), Art. 11 (Dunkel Draft, Dec. 20, 1991); North American Free Trade Agreement, Art. 1705(2)(d), 1706(1)(d) (Sept. 6, 1992).
- 55 H.R. Rep. No. 735, 101st Cong., 2d Sess. 8 (1990).
- 56 Act of October 4, 1984, Pub. L. No. 98-450, 98 Stat. 1727; Act of November 5, 1988, Pub. L. No. 100-617, 102 Stat. 3194.
- 57 Pub. L. No. 101-650, 104 Stat. 5089, 5134, 5135.
- 58 H.R. Rep. No. 987, 98th Cong., 2d Sess. 2 (1984).
- 59 H.R. Rep. No. 735, 101st Cong., 2d Sess. (1990).
- 60 Council Directive on Rental Right and Lending Right and on Certain Rights Related to Copyright in the Field of Intellectual Property (92/100/EEC), 1992 O.J. (L 346) 61.
- 61 Council Directive on the Legal Protection of Computer Programs (91/250/EEC), Art. 4(c), 1991 O.J. (L 122) 42, 44.

- 62 See, e.g., Draft Model Law on Copyright (Memorandum prepared by the International Bureau of the WIPO for Committee of Experts on Model Provisions for Legislation in the Field of Copyright, 3d Sess.), Doc. No. CE/MPC/III/2, at paras. 224-25 (1990); Report of Committee of Experts on Model Provisions for Legislation in the Field of Copyright, World Intellectual Property Organization, 3d Sess., Doc. No. CE/MPC/III/3, at para. 113 (1990); Part II Protocol Memorandum, at paras. 118-130; Report of 2d Session, at paras. 96-107.
- 63 Examples are the Copyright Clearance Center ("CCC") and other members of the International Federation of Reproduction Rights Organizations ("IFRRO"). In the U.S., ASCAP and BMI perform a similar function with respect to the right publicly to perform musical compositions, as does the Harry Fox Agency with respect to the right to record musical compositions.
- 64 This possibility is being investigated in the U.S. by, for example, the CCC and the Corporation for National Research Initiatives ("CNRI"). See, e.g., John R. Garrett & Joseph S. Alen, *Toward a Copyright Management System for Digital Libraries* (1991) (report prepared by CCC under an agreement with CNRI); CNRI, *Workshop on the Protection of Intellectual Property Rights in a Digital Library System: Knowbots In The Real World* (1989); Patrice Lyons, *Distribution and Licensing Opportunities Through Messaging: Copyright Clearance Issues* (May 19, 1992) (unpublished manuscript on file with the authors).
- 65 See, e.g., John A. Adam, *Applications, Implications*, *IEEE Spectrum*, March 1993, at 24, 31.
- 66 17 U.S.C. Sec. 1003-1007.
- 67 Using a digital audio recorder without an SCMS component, a user could obtain a compact disc (A), use it to make a perfect digital copy (B) and give that to a friend or sell it. That friend or purchaser could use copy B to make another perfect digital copy (C) and give that copy away or sell it, and so on. The 100th-generation copy would be as good as the original. SCMS permits a user to make copy B, but prevents anyone from making further copies from copy B. See 17 U.S.C. Sec. 1001 (11). This system can be contrasted with methods of copy protection that have been attempted for computer programs, which seek to prevent a user from making even copy B.
- 68 17 U.S.C. Sec. 1002.
- 69 Pub. L. No. 102-563, 106 Stat. 4237 (1992), codified at 17 U.S.C. Sec. 1001-1010.
- 70 Ed Krol, *The Whole Internet User's Guide and Catalog* 191 (1992).
- 71 See, e.g., CNRI, *Workshop on the Protection of Intellectual Property Rights in a Digital Library System: Knowbots In the Real World* (1989).
- 72 Smart cards are the same size and thickness as ordinary credit cards, but contain a microprocessor and memory instead of a simple magnetic strip. See, e.g., Thomas Hoffman, *NCR, AT&T Usher In 'Smart' ATM Technology*, *Computerworld*, Dec. 14, 1992, at 24. They can store a modest amount of personal information in digital form, such as the cardholder's banking profile, voiceprint, or medical history. *Id.*

Research is underway on using smart cards as cryptographic keys and electronic signatures. Kevin Power, Smart Cards and Public Keys Unlock Crypto's Potential Uses: More Powerful Microchips Let Agencies Move Away From Simple Passwords, Government Computer News, Feb. 1, 1993, at 75. By attaching a smart card reader to a personal computer, users could authenticate their identity and access privileges, decrypt information stored in encrypted form, and pay for the transaction--all automatically.

73 William Shakespeare, Hamlet, Act III, Scene 1.

**THE PUBLISHER IN THE ELECTRONIC AGE:
THE LICENSING OF RIGHTS**

by

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Introduction

Publishing as a trade distinct from bookselling has now existed for approximately 200 years, and over those years publishers and authors have responded to new market possibilities by developing the licensing of their intellectual property rights to match those market possibilities. From the licensing to Tauchnitz of British authors' works for "Continental Editions" in the mid 19th century to the current complexities of book club rights, what Professor W.R. Cornish has memorably called "an exotic concoction of prospects" lies before authors and publishers of print-on-paper publications.

The stability of print-on-paper production, the relative stability of the markets at which books are aimed, and the gradual pace of new media, e.g., broadcasting, allowed a gradual emergence of licensing strategy. Those stabilities are, however, strikingly absent from the new world of electronic publishing. Computer technologies advance at a pace which makes each decade's work irrelevant. The publisher is faced with threats and opportunities which are no sooner enunciated than made obsolete by new threats and opportunities--and threats and opportunities, it must be noted, across the whole range of general fiction and non-fiction, children's books, schools and higher education texts, scientific and professional books and journals.

The purpose of this contribution is not to describe the latest state of the technology relevant to any particular market, but to offer some thoughts on a licensing strategy for the electronic age.

Such a strategy is an essential element in the establishment of general systems for the positive applications of digital technology to ensure, first, the fast dissemination of knowledge, and, secondly, the securing of means to ensure fair returns to the creators of that knowledge.

The context for a licensing strategy can be expressed in two exhortations to publishers:

* Charles Clark is General Counsel to the International Publishers Copyright Council. The views expressed in this presentation are personal.

(1) Acquire broadly and licence narrowly

For the sake of both author and publisher, the publisher must be put "in the driving seat." He alone, and not the individual author, has the market and financial power to negotiate for and to secure reward from licensees of electronic rights. He can only perform this function if he commands the full repertoire of rights, from himself putting onto the market in either on-line or distributed form what the author has written, to licensing the inclusion in "infotainment" or "edutainment" products part of the author's work.

Whether this or that specific act of licensing falls within or without the boundaries of the rights traditionally handled in different national trades by publishers on behalf of authors and themselves is irrelevant to the urgent need now to concentrate the power to publish and to licence in electronic media where the power can be most effectively used, and that is in the hands of the publisher.

(Two glosses are necessary here. First, there are some countries, notably the USA and the UK, where some of the rights in general trade publishing are placed not in the hands of the publisher, but in the hands of the author's literary agent, a very important figure in book trades in the common law tradition. The literary agent will handle, for example, film and TV rights of a novel. There may be some argument in those cultures that the prime right of putting a work onto the market in electronic form should be handled by the agent. There is, however, a real danger, that, as agents and publishers enter one of their lengthy internal debates, the marketplace will move on and simply appropriate what it cannot acquire a licence for, under the cover, if not of darkness, then of "fair use" and "fair dealing" greyness. Authors and publishers do not have approximately 200 years to secure rewards for creators in the electronic age. They scarcely have two.

The second gloss follows the first. If agents are to be persuaded that the publisher should handle electronic rights, then publishers must carry the professionalism to deploy those rights to the author's best advantage in the marketplace).

Having acquired electronic rights broadly, the publisher should then licence narrowly both in scope and in time. A Multimedia Personal Computer is not a Data Discman, and the publisher does nobody a favour by licensing overbroadly. By placing a possible form of exploitation in inappropriate hands, the publisher may cut out a licensable source of income. A rough equivalent would be for a publisher to place all paperback rights in the hands of a book club publisher! Publishers must now keep in touch with all market developments which new technologies open up. "Virtual Reality" rights to juvenile or science fiction may be just round the corner.

(2) Control the controllable, and come to terms with the uncontrollable

There is in print-on-paper publishing an understood hierarchy of acts authorized by the copyright owner of a copyright work. First, to issue the work to the public is a prime act: to adapt the work by way of translation is a prime act. These prime rights, most of which are secured in the Berne Convention itself, are indeed usually listed in copyright legislation as acts restricted to the author's exclusive authority by the copyright in his work. The publisher, whether as exclusive licensee or as assignee of copyright from the author sets his terms for publication.

There is, secondly, a range of what the trade calls 'subsidiary rights' from anthology and digest rights, to serial rights, paperback and book club, to merchandising rights, to noncommercial rights for the print-handicapped, etc.

And thirdly there is, quite simply, photocopying. Reprographic facsimile reproduction (to give it a grander title) is an activity which is not controllable by the individual author or publisher, and techniques of both collective administration and of collection licensing (we return to those meanings later) of this particular right of reproduction have been gradually developed since the 1960's and 1970's. Now in the 1990's joint author and publisher societies, called RROs--Reproduction Rights Organisations--exist in 20 countries in order to bring some measure of "record and reward" to rightsholders for acts of photocopying in schools, in higher education, in industry and research, and in government itself.

Part one: A hierarchy of rights

A hierarchy of rights, commonly understood for print-on-paper publications, urgently needs to be agreed between publishers and authors and between publishers themselves for acts of electronic publishing. The ability to license subsidiary rights will often depend upon the width of the grant of the prime rights from author to publisher.

What are the prime rights, equivalent, for example, to publishing multiple copies of the author's work to the public? What are the subsidiary rights? Is there an equivalent to photocopying?

The following list is neither exhaustive, nor anything but tentative. It is, however, built upon a conviction that a hierarchy of rights, equivalent to the hierarchy familiar for print-on-paper publications, is a realistic endeavour and should be attempted precisely because the structure is familiar to all publishers, and that familiarity ought to make progress in licensing strategy that much easier and faster to achieve.

Prime rights

1) to issue a copyright work on electronic media

This right will cover publication by the publisher himself in on-line form (e.g., the Lexis legal service) and in distributed form (e.g., Oxford University Press CD dictionaries).

2) to authorize the storage of a copyright work in any medium by electronic means

This right will cover, for example, the authorization of storage by a document supply center in order for it to deliver print-on-paper copies to its customers. This authorization may be direct, but may also be through the agency of a permissions service, as in the USA several hundred publishers have authorized storage through the Copyright Clearance Center.

Subsidiary rights

1) Inclusion into another publisher's/producer's electronic product or service

The materials appropriate to different products or services will range from learned articles and chapters of books for educational electronic study packs, to portions of novels and poems for language learning CDIs, to tourist guides and maps for hand-held CD-Roms, often called "electronic books".

2) Screen display

This is, of course, an essential feature of most electronic products and services, but it is itself an act of reproduction, restricted by the copyright in the work being displayed, and should be licensed as such.

3) Performance

Display on screen may take place in circumstances, e.g., in a lawyer's office in the presence of clients, which could suggest that an act of public performance takes place.

4) Downloading/distribution

Clearly this activity runs after the prior act of storage and must itself be licensed. (Publishers are at the moment very reluctant to authorize document suppliers themselves to supply machine-readable versions to their customers.)

5) Networking

Downloading may take place to an identifiable number of terminals on a known and licensable site (e.g., a university). Or it may take place to an indeterminable number of terminals (e.g., across many university sites, as in the UK's SuperJanet project).

6) Printing out of hard copies

Printing out of hard copies may be for individual use by a user working at home: it may be for class preparation by a teacher: it may be in multiple quantities for training purposes in industry. It may be from a network on one site or at many sites.

7) Manipulation

This difficult issue affects artistic as well as literary copyright works. In education, many teachers wish to manipulate texts in order to present relevant materials for their particular students. In scholarly and scientific research, researchers may want to extract and amend the texts of others as part of the process of their own research. It may be possible to license manipulation on the explicit understanding that no moral rights of the relevant authors have been waived, so that any non-attribution of authorship, any derogatory manipulation of a text or artwork, are at the risk of infringement of the author's moral rights.

8) Derivative works

Beyond unauthorized manipulation lies the unauthorized derivative work. S. 101 of the US Copyright Act includes in its definition of derivative work not only familiar acts of adaptation, e.g., translation, condensation, but broadly "any other form in which a work may be recast, transformed or adapted". The creative possibilities of such transformation are, of course, precisely what is exciting in multimedia manipulation. How to license, how to gain reward for inclusion of copyright works in derivative works, is a major task for the rightsholders' community.

9) Rental

Rental is a marketing device which has been of minimal interest to the book world since the paperback revolution made the commercial "lending library" of the 1930's obsolete, but it may become an important marketing medium, especially for the domestic computer program market.

Rights suitable for collective administration or licensing

A distinction is made in this presentation between collective administrative and collective licensing of rights. In collective licensing, the RRO will negotiate with a user community, e.g., high schools, e.g., the pharmaceutical industry, e.g., state health services, an overall price for acts of photocopying with appropriate limits. Uniform fees are distributed to rightsholders on the basis of survey or sampling techniques.

The rightsholders in some legal cultures, in effect, abandon the unrealistic search for reward through individual licensing in favour of compensation from their national RROs, whose licensing of user communities they have mandated to the RRO.

In collective administration, perhaps better designated as permissions clearance, however, the individual rightsholders mandate to the RRO the direct dealings with users, but reserve to themselves the reward element, and possibly some licensing conditions. (See also Prime Rights, 2) above.)

The sheer magnitude of the threats to the economic viability of publishing posed by new technology has made publishers very wary of mandating to RROs collective licensing of electronic rights. The RROs have, however, responded to the pressures on them (as a convenient target) from user communities, particularly from libraries, by thinking hard about their possible roles in electronic publishing. A two-tier system may develop under which a very modest tranche of rights may be collectively licensed, with, beyond that level, a permissions clearance service made available by an RRO to users with conditions set by individual publishers. One such permissions clearance service for photocopying has been pioneered by the American RRO, the Copyright Clearance Center, in producing a "one-stop" service for academics who wish to include journal and text materials in study packs. Another service for photocopying has been pioneered by the British RRO, the Copyright Licensing Agency. It is known as CLARCS (CLA's Rapid Clearance Service).

CLARCS is a computerized permissions service, first devised for dealing with requests from user communities for photocopying permissions which fall outside the limits of collective licences negotiated with such a community. Users who wish to copy phone or fax special CLARCS numbers at the CLA office

to ask for permission. The CLARCS operator, having established the caller's identity taps into the CLA title base (including currently 600,000 ISSNs) and brings up on screen the bibliographic record of the item requested and the copying limits and copying fee set by the publisher for the item.

The account customer is told whether the item may be copied or not in the quantities requested and if "yes" what the fee will be. Providing the customer agrees to the charge, then permission is granted orally and an authorization number allocated. The charge is then moved to the licensee's account for later invoicing.

By arrangement and for a very modest fee, CLA is able to pass back to rightsholders any requests which fall outside the limits set.

CLARCS enables individual rightsholders to fix their own copying quantity limits if required and to set their own copying fees title by title.

CLA, finally, sets the copying fees, known as default prices, for those rightsholders who, while mandating CLA, fail to fix their own rates. It is clear that CLARCS is capable of becoming a permissions clearance service for electronic rights requests.

It may, with that explanation, be anticipated that publishers may mandate to collective licensing by an RRO as little of their electronic rights as they think they realistically can, and may mandate to permissions clearance by an RRO some of the Subsidiary Rights set out above, because of the sheer convenience not only to them, but also and especially to the user communities of having available a "one-stop" clearance service.

Part two: Record and reward

The subject of the second part of this presentation can be summed up as "record and reward." The licensing of the economic rights of copyright is not an academic exercise. It is the central means for securing to authors and to their business partners, publishers, reward and remuneration from the uses in the marketplace of what they together create.

In the traditional world of print-on-paper publishing of novels, biographies, etc., those rewards and remunerations come from the retail book trade's sales, from fees negotiated with the various subsidiary rights operators, from subscription fees for journals, and from fees for photocopying negotiated by RROs.

In the brave new electronic world, there are fairly well developed "record and reward" systems, e.g., subscription, for the securing of income for on-line database services. (And the primary publishing of journals in electronic form may develop very fast indeed. The On-Line Journal of Current Clinical Trials, launched in July 1992, has, it is understood, attracted already well over 1,000 subscribers.)

The sale of distributed databases need not entail principles of reward different from those for books distributed via shops or direct mail, although the numbers put on sale may be counted in a few hundreds of copies, and the retail prices themselves in many thousand of dollars. Whether "shrink-wrap" conditions of sale may be appropriate to retail and direct mail sale CDs is perhaps still an open question.

The fees to be charged for some subsidiary rights will take time to settle down to "ball park" figures, but soon they must and will. (A pooling of current practical experience is now an urgent priority.)

Those few rights which are appropriate for collective licensing, especially perhaps single and multiple hardcopy printouts at definable stations at definable sites (e.g., schools and colleges) should find appropriate fee levels because of the obvious analogies with photocopying fees.

The areas of real difficulty are those in which there is no online contract, no retail sale, no collective licensing and no collective administration. These are areas in which either the electronic use, although properly licensed, is not measurable and thus not rewardable by conventional means, or occasions when material properly licensed to some users is improperly further stored, downloaded, printed out, by others.

Given that technology has caused the problem, technology must be made to work to solve the problem. In order to address this issue, the Commission of the European Community included in the research programme of Esprit II the topic of "Electronic Copyright," and eventually a Consortium was put together and was awarded a contract, under the heading CITED (Copyright in Transmitted Electronic Documents). The CITED team has reached the stage of building a conceptual model which now needs to be implemented and tested on various applications. The ambition of the CITED team and the width of application which the team envisages for their model should not be underestimated. The proposed applications include:

- Audio CD/DCC/mini disc;
- satellite TV and video libraries (where digitally stored);
- PC and workstation software;
- copying articles on systems like ADONIS;
- documentary databases and text retrieval systems;
- value added service networks;
- directories and other databases held on CD-ROM;
- electronic books;
- electronic delivery by document supply centers.

The partners in ADONIS, a document delivery system that provides a collection of STM material, set up and developed by a group of STM publishers, have, as the above list indicates, worked with the CITED team to build a system that combines authentication of the user with encryption (for security) and credit balance and display with transaction logging (for charging).

This ADONIS-CITED model application is described by Barrie T. Stern, Managing Director of ADONIS, in a recent article in "Rights," vol. 6, No. 3. Barrie Stern also notes:

"A variation of the above scene is the use of a "smart card" which is like a credit card containing information about the user's identity and the level of credit remaining in his CITED account. This approach has been used in non-CITED applications and is a useful feature for students and faculty members of universities that can be provided with different access rights and levels of pricing.

"Already the stand-alone or single work station CITED/ADONIS system can be demonstrated and it is the intention to develop the concept further to provide protection in a networked environment."

Finally, if the answer does lie, as many believe, "in the machine," then the intellectual property industry must combine to persuade WIPO and its member states that protection and "record and reward" devices must, as a matter of law, be securely placed within the relevant equipment. Legal sanctions will be needed against those who interfere with or bypass, for example, the CITED system incorporated into an electronic information store in order to avoid payment.

A draft Article is offered here for inclusion in the EC draft Directive on the Legal Protection of Databases (to offer the EC as an immediate target for persuasion, which might in turn persuade WIPO in its consideration of the protection of databases as part of the Berne Protocol).

Draft Article:

"Member states shall provide in accordance with their national legislation appropriate remedies against a person committing any of the acts listed below:

- (a) removing or circumventing any technical device included in, or associated with, a store of information in electronic form and whose purpose is to provide an account of which parts of the information store have been extracted by a user;
- (b) any act of putting into circulation, or the possession for commercial purposes of, any means the sole intended purpose of which is to facilitate the unauthorized removal or circumvention of such a technical device which may have been incorporated in, or associated with, an electronic store of information."

Conclusion

In conclusion--and for the very last time--rightsholders have very little time. If the hierarchy of rights sketched here has any merit, then it is urgent that rightsholders develop the sketch both within their national associations and national RROs, and at international level, especially through the International Group of Scientific, Technical and Medical Publishers (STM) and the International Federation of Reproduction Rights Organizations (IFRRO). These two bodies have already worked together to produce a first Joint Statement in the autumn of 1992.

Electronic publishing knows no national boundaries and in the complex negotiations with powerful library, information and user communities which are imminent (foreshadowed at the Knowledge for Europe Conference in Brussels in November 1992), it is vital that rightsholders speak, if not with one voice, then in harmony both with each other and with the Reproduction Rights Organisations. For only then can rightsholders turn, as the public interest now requires, from the defensive protection of their copyright interests to the positive promotion of the lawful uses of digital technology.

DIGITAL USE OF SCIENTIFIC AND TECHNICAL INFORMATION

by

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Many of you here today will recall one of the great models of imminent technology that characterized the debate over copyright revision in the United States during the 1960s and '70s.

This was the model of the encyclopedia or other text loaded into a host computer and transmitted, on demand and by segment, from central storage to user terminals throughout the country.¹

After almost two decades of debate over such technology-pertinent issues as whether copyright control should be imposed at computer input or output,² the Copyright Revision Act was passed in 1976³--and for over another decade nothing much at all happened with this model.

But in scientific, technical and medical publishing ("STM") today, that vision of the future is now very much here in the present; and it is here with a vengeance. As I will note a bit later, however, it would be a great mistake to view this model of transmission from remote storage in a vacuum or as the sole agent of change in STM markets--several other, equally fundamental, effects of the combined forces of technology push and market pull are revolutionizing the world of STM publishing.

Before considering these changes, and a few selected issues of copyright law that are relevant, let me say a few words about STM publishing; and particularly about the vital subset of STM journal publishing.⁴

Scientific and technical journals are an integral part of the process, and hence of the progress, of scientific research. They provide focused, credible and accredited, and timely information to the academic and corporate research communities. They record scientific experimentation in such fashion as to both permit its repetition to test accuracy, to refute or confirm, and to enhance or refine, as well as to facilitate avoidance of reported and demonstrably unproductive effort.⁵ It largely remains, in sum, for the research community as it long has been: science is not science until it is published.⁶

Viewed this way, it must be concluded that it is vitally important to society, and to the increased investment required to productively utilize new information technologies (conversion of prior product, new product development, coding for efficient retrieval, adoption of distribution alternatives, etc.), that the economic incentive and stimulus to investment in scientific publishing be maintained by domestic and international copyright laws. The alternative to copyright also remains as it long has been: wholesale government or like institutional patronage of scientific communication.⁷ This is an alternative that necessarily invokes government or similar selection, control and imposition of scientific truth and technological orthodoxy. However much some measure of public or similar funding may be appropriate in research today, overwhelming "official" intrusion into scientific communication is an alternative that is clearly not acceptable.

I would quickly acknowledge to our colleagues here from outside the United States, to the distinguished representatives of other states and of the European Community, to our hosts from the World Intellectual Property Organization, and to others of the "droit d'auteur" persuasion, that I accept the risk and consequence of debate in referring to "investment" as a goal of copyright; for I submit that if copyright is to have any meaningful role in the world of digital technology for all the creative industries (as we all, I think, believe it must) then its part in promoting entrepreneurial investment as well as nourishing garret poets and their "authorial" kin must be accommodated and encouraged.

Let me turn to a quick tour, then, of the fundamental changes underway, largely (but not solely) attributable to the advent of digital computer technology, in the STM marketplace.

The hallmarks of this technology in STM are common with its characteristics in other copyright industries that you will hear from during this seminar: ease and ever-increasing capacity of storage; rapidity and geographic breadth of transmission; fidelity and clarity of reproduction; manipulability and linkability of components--in our case, the so-called "hypermedia" potential; and what David Baron referred to this morning as the "separation of content and medium" or what the noted STM publisher and futurist, Mari Pijnenborg,⁸ has identified as the diminishing relevance of the mere "artifacts" of scientific communication.

What is changing about the STM marketplace? A great deal! The product and role of the publisher is changing. Integration of multiple media has already been mentioned today, as has the simultaneous availability of both on-line dissemination and distributed formats like CD-ROM. An equally fundamental product change in scientific publishing, however, is the disintegration of the conventional publishing package. It is becoming increasingly clear that the market is demanding the piece--the journal article or book chapter--as well as the package--the journal issue or book.⁹ STM publishers look down the road and anticipate this effect being magnified. The perceptive leaders in this community see the future of scientific publishing as characterized by increasingly intense interactivity between publisher-enhanced databases (so-called "knowledge bases") and solution-driven end-users. The publisher, in this world, will serve significant new functions in identifying users' needs and correlating solutions, and facilitating users' own navigation among discrete, ever smaller knowledge and experience elements in the so-called digital or virtual library.¹⁰

Input and storage technology is changing. Expanded storage capacity and improved graphics scanning technology has made full text storage and delivery of technical journal articles, complete with illustrations, formulae, graphs and charts, a reality. The marketplace is moving well beyond bibliographic and other first-search databases.¹¹

Of great importance to STM publishing, partly in consequence of the foregoing but also influenced by funding issues, the libraries see their role as very different from in the past.¹² There is a clear, pronounced movement in librarianship from an archival to an access/intermediary role. "Just in time rather than just in case"--that is, getting the patron what it wants (through interlibrary loan, document delivery, or network service) when it wants it, rather than collecting and retaining material in case a user wants it--is now commonly the avowed objective of the technology-oriented (and financially squeezed) librarian. Other by-words being heard in the library community are "access [i.e., photo- or electro-copies] rather than ownership [i.e., subscriptions]" and "resource sharing" [i.e., collection specialization and diminishing of subscription holdings in reliance on cooperative arrangements involving photo- and electro-copies of portions of works].¹³ One can sympathize with the economically burdened library community and the plight of their collections development offices--who now increasingly preside over de-accession programs--yet not succumb to the counterproductive "solution" of tolerating or facilitating unauthorized, uncompensated reproduction of copyrighted works and imposing a subsidization role on authors and publishers of technical books and journals. And if you will reflect for a moment on the new roles I have hinted at for the publisher and library sectors--both focusing on customized, on-demand information packaging--you will readily note a degree of tension and need for service and marketplace differentiation that will continue to emerge.

There are marked changes in dissemination as well. New players, other than librarians, are in the mix, especially the document delivery (DDS) or individual article supply (IAS) services, whose activities are increasing and attracting entrants from previously separate ventures.¹⁴ Joining such older operations as the Information Store and Information on Demand are the abstracting and indexing, table of contents and other current awareness services (CAS) that have laterally expanded into fulltext document supply, creating yet another new merged acronym --"CAS-IAS." So too the traditional subscription agents and library supply business are now spinning off commercial document supply operations--UNCOVER, FAXON and EBSCO are all now in the fold--as are and have STM and other publishers (or their subsidiaries) themselves, both in consortia (ADONIS) and individually (e.g., ASK IEEE, CAS Document Delivery Service, and Information Access Co.).

The role and impact of other important agents of scientific communication are evolving as well. Reprographic rights organizations have demonstrated their domestic and international utility as collective rights administrators of STM material to publishers, document delivery services, libraries and end-users alike with respect to conventional photocopying;¹⁵ their place in electronic article storage and delivery is being carefully considered as individual publishers review their business plans, anticipate the future balances of electronic- and paper-based receipts and direct and licensing revenues, speculate on the possible use of the new technology itself to

enhance transactions, monitor usage, and provide essential market feedback,¹⁶ and otherwise take into account the new features (such as manipulability of text and extraordinary reach) of digital technology.¹⁷ Of course the growth of the electronic "information highways"--INTERNET, SUPERJANET, and (in the U.S.) political commitment to development of the National Research and Education Network (NREN)¹⁸--and (not to be overlooked) their carriers and other supporting and ancillary entities is another powerful messenger of change. And the increasing importance of the end-user in specification and determination of information unit and package parameters must be taken into account as well.¹⁹

What, then, are some of the copyright issues that arise in this new and still emerging context? To a great degree they boil down, I think, to a single objective: to preserve the proven value of the copyright system as the engine²⁰ of creativity, communication, and publishing investment and, particularly in a rapidly changing environment, as the fulcrum of a legal system that permits rational planning and choice.²¹ Within this framework I would suggest three sub-issues that seem particularly apropos to this forum, though there are undoubtedly others to be considered as well.

FIRST, there is the application of Article 9(2) of the Berne Convention. This provision permits minor exceptions to reproduction rights "in special cases" that "do not conflict with a normal exploitation of the work" or "unreasonably prejudice the legitimate interests of the author."

In applying 9(2), it is essential that the "interests of the author" be understood to include the interests of the publisher as well, whether as successor to the author, or as employer in the case of works from those jurisdictions (such as the United States) using the concept of "work for hire."

It is equally essential that "normal exploitation" today be understood to encompass licensing markets for reprography, electrocopying and network delivery of journal articles, book chapters, and other pieces of works. (STM publishers were delighted to note, in the preparatory documents for WIPO's June Meeting of the Committee of Experts on a possible Protocol to the Berne Convention, that the Secretariat has acknowledged that implications to the contrary in the records of the 1961 Stockholm Conference are outmoded and inapposite today.)²²

Similarly (and again we are pleased to find agreement in the June Protocol documents),²³ it must be clearly established that there is no per se exception for personal or internal use recognized in the Berne Convention. These uses, if permitted outside the copyright owner's rights, must meet all the criteria of Article 9(2). The concept of a "personal use exemption" was developed in response to perhaps unspoken political concerns and in an age of handwritten note-taking by scholars. Its application today cannot be reconciled with the Convention and would render the safeguards of Article 9(2) meaningless.²⁴ Finally with respect to Article 9(2), it must not be assumed that older environment library privileges found in some national copyright laws and constructed on a model of occasional, low technology, and ancillary episodes of photocopying are equally applicable to today's focused, electronic and networked world of document delivery by both private and public institutions; they commonly will not be when properly tested against national precepts and the international standard of Berne.²⁵

SECOND, and briefly, I will be foolish enough to step in where those wiser than I did not tread this morning and suggest one response to the Director General's question regarding moral rights in the digital age.

I believe that careful consideration of the droit moral in the digital world is warranted --- but for what many of you will perhaps consider a somewhat perverse reason. The world of digital technology does promise important socially and scientifically useful ways of adapting and disseminating information in new contexts, media and formats. There is a real risk that too rigorous an invocation of the traditional European concept of moral rights may impair fulfillment of that promise and enhancement of science by imposing undue obstacles and burdens on entrepreneurial experimentation with, and exploitation of, the new publishing and communications technologies.²⁶ I do not overlook the increased possibilities for unauthorized modifications and distortions inherent in the manipulability of digitized text and graphics; but I would suggest that (at least in STM publishing) what may be needed, instead of aggressive reliance on the traditional author's "droit moral," is a new publisher's "droit d'authenticité"--a right exercised on behalf of the scientific community's interest in dissemination of reliable information rather than the individual creator's personal interest in withdrawing perceived assaults on reputation, and aligned with the STM publisher's traditional role of maintaining credible communication through peer review, article selection, and the like.

THIRD, I think it is most important in this forum to sound another warning bell against escalating erosion of the hallmark principle of national treatment.²⁷ Concerns over erosion of national treatment have been particularly expressed at this Symposium by the American motion picture and recording industries, but are shared by others as well. American publishers, for example, have been forced into the uncomfortable position of hesitating to join their European colleagues' quest for a potentially useful "publishers' right" on the grounds, in part, that it may be subjected to material reciprocity in a fashion detrimental to the allocation of copying or hardware royalties. In its most recent statement on the question, the International Publishers Copyright Council (IPCC), representing the copyright interests of the International Group of STM Publishers and the International Publishers Association, including their American constituents, has therefore made clear that any development of an independent publishers' right instrument that might result from considerable additional study "must ... extend that right on a national treatment basis not only to [each country adhering to that instrument] but also to members of the Berne Convention."²⁸

The explosion of digital reproduction and communications technology will continue to invite innovation in governmental, legislative, and legal councils (as well as among businesses). But this will principally pertain to the relatively detailed, albeit terribly important, issues of delineating rights ownership, assuring enforcement and compensation, and detecting unauthorized use; it should not undermine a core principle of copyright: reward and incentive to creation, development, and dissemination of intellectual works.²⁹

At the international level, this core principle has flourished on the bedrock of non-discrimination and national treatment. This is a time of legal and policy experimentation that will evolve at varying speeds and success among states; it is also a time of instantaneous cross-border transmission of works and growing multi-national markets and revenue;³⁰ it is, in sum, precisely the wrong time for governments to retreat to principles of material reciprocity.

* * *

I want to thank the World Intellectual Property Organization for the opportunity to present these remarks and for their foresight in convening this Symposium.

NOTES

- 1 See, e.g., Cambridge Research Institute, *Omnibus Copyright Revision: Comparative Analysis of the Issues* 87 (ASIS 1973).
- 2 See *id.* at 90-94.
- 3 As originally passed in 1976, effective January 1, 1978, the Copyright Revision Act did not squarely resolve the use by computers of conventional literary works. That issue was left for further deliberation by the National Commission on New Technological Uses of Copyrighted Works (CONTU) and the law simply provided that it "does not afford to the owner of copyright in a work any greater or lesser rights with respect to the use of the work in conjunction with automatic systems capable of storing, processing, and retrieving information ... than those afforded to works under the law ... in effect on December 31, 1977 ..." 17 U.S. Sec. 117 (1976) (since repealed). In 1978 CONTU concluded that the general principles of the revised Act governing such matters as reproduction rights and fair use were applicable in this context, which thus required no special legislation. CONTU Final Report, July 31, 1978, at 1, 38, 39-40. Section 117 was then amended to delete the quoted language, leaving such general principles to apply. P.L. No. 96-517, Sec. 10, 94 Stat. 3028, December 12, 1980.
- 4 See generally, e.g., King, McDonald & Rederer, *Scholarly Journals in the United States* (Hutchinson Press 1981); *Scholarly Communication*, Report of the National Enquiry (Johns Hopkins University Press 1979). (The rapid changes in this field, some of which are discussed below, counsel caution in considering studies of this vintage.) See also, Graham, *What Publishers Do*, 6 RIGHTS No. 3 at 1 (1992).

For a historical review, see Meadows (ed.), *Development of Science Publishing in Europe* (Elsevier 1980). For a respected American jurist's view of STM publishing and copyright, see American Geophysical Union (AGU) v. Texaco Inc., 802 F. Supp. 1 (S.D.N.Y. 1993) (Leval, J.) (photocopying of single STM journal articles by employee of for-profit research-oriented corporation held not fair use) (appeal argued). For the significance of journal publication in assessing expert scientific testimony offered in judicial proceedings, see Daubert v. Merrel Dow Pharmaceuticals, 1993 LEXIS 4408 (U.S. Sup. Ct. June 28, 1993). For an interesting case examining the nature of letters to the editor published in a scientific journal for the purpose of defamation law, see Immuno A.G. v. Moor-Jankowski, 74 N.Y. 2d 548 (1989) (letter held an "expression of opinion" rather than of fact and hence protected by guarantee of free speech) (Kaye, J.).
- 5 See AGU v. Texaco, fn. 4, supra at 4. (STM journals provide "awareness of new learning, suggestion of new ideas and approaches, avoidance of duplication of experimentation that has already been done, avoidance of avenues of experimentation that have been demonstrated to be fruitless, adoption for productive research of findings from research of others, and other valuable uses too numerous and varied to mention.")

- 6 In Daubert v. Merrel Dow Pharmaceuticals, fn. 4, supra at *24, the Supreme Court concluded that for the purpose of interpreting the Federal Rules of Evidence and admitting expert scientific testimony in U.S. federal trials, STM journal publication is a "relevant, though not dispositive, consideration in assessing the scientific validity of a particular technique or methodology on which an opinion is premised" and that publication is "a component of 'good science' ... because it increases the likelihood that substantive flaws in methodology will be detected;" but added that some unpublished theories might be reliable and pertinent to the judicial proceeding as well.
- 7 Cf. Stewart, International Copyright and Neighboring Rights 12 (1983).
- 8 This speaker gratefully acknowledges the teachings, patience, leadership, and intellectual and business foresight of Mari Pijnenborg in stimulating myself and the STM publishing community as a whole to assess and confront technological change. His own explorations in part underlie, but go well beyond, the small sketch drawn here. See, e.g., Pijnenborg "Where Is the Knowledge We Have Lost in Information," presented to the Faxon Institute Conference, Reston, Virginia, USA, May 5, 1992.
- 9 For an example of this outside of STM publishing, see Basic Books, Inc. v. Kinko's Graphics Corp., 758 F. Supp. 1522 (S.D.N.Y. 1991) (unauthorized creation of educational "course packs" containing chapters from text and trade books held infringing).
- 10 See fn. 8, supra.
- 11 E.g., Document Delivery Gets Personal, Online, May 1992 at 6.
- 12 See generally, Nelson (ed.) Library Technology 1970-1990: Shaping the Library of the Future (Meckler 1990).
- 13 Compare, U.S. Senate Report No. 94-473, 94th Cong., 1st Sess. 70 (characterizing the following as proscribed "systematic" copying falling outside the library privilege of Section 108 of the U.S. Copyright Act: "Several branches of a library system agree that one branch will subscribe to particular journals in lieu of each branch purchasing its own subscriptions, and the one subscribing branch will reproduce copies of articles ... for users of the other branches;" and "A library with a collection of journals in biology informs other libraries with similar collections that it will maintain and build its own collection and will make copies of articles from these journals available to them and their patrons on request, accordingly, the other libraries discontinue or refrain from purchasing subscriptions ...").
- 14 See, e.g., Khalil, Document Delivery--A Better Option? Library J., February 1, 1993, at 43.
- 15 See AGU v. Texaco, Inc., fn. 4, supra; see also, Besen & Kirby, Compensating Creators of Intellectual Property: Collectives That Collect (1989).
- 16 See Stern, The Significance of CITED for STM Publishers, 6 RIGHTS No. 3 at 7 (1992).

- 17 See articles in 6 RIGHTS No. 2 (1992); see also STM-IFFRO Joint Statement (1993).
- 18 See, e.g., McClure et al., *The National Research and Education Network: Research and Policy Perspectives* (Syracuse U. School of Information Studies, Ablex Publishing 1992); *Grand Challenges: High Performance Computing and Communications--A Report by the Committee on Physical, Mathematical and Engineering Studies to Supplement the President's FY 1992 Budget* (White House Office of Science and Technology Policy).
- 19 See Pijnenborg, fn. 8, supra.
- 20 Two noted American jurists have expressly denoted the "engine" function of copyright: Supreme Court Justice Sandra Day O'Connor, in Harper & Row Publishers, Inc. v. Nation Enter., 471 U.S. 539, 558 (1985) (copyright as "the engine of free expression") and District Court Judge Pierre N. Leval in AGU v. Texaco, fn. 4, supra, at 27 (profit motive provided by copyright "is the engine that ensures the progress of science").
- 21 Other legal disciplines, such as those governing competition, privacy, and telecommunications, are, of course, pertinent as well. And innovative proprietary rights principles supplementary to conventional copyright may be appropriate in particular circumstances and jurisdictions; for example, the European Commission's proposal for a right against "unfair extraction" from databases (presently, unfortunately, limited to "commercial" re-use and otherwise debatable in some of its details) may be useful in those--not all--jurisdictions where traditional copyright laws cannot reach appropriation of discrete data elements and research effort as such. See Feist Pub., Inc. v. Rural Tel. Serv. Co., 111 S. Ct. 1282 (1991) (U.S. law); see also, Pijnenborg, fn. 4, supra. But legal innovation can be misdirected and counterproductive if opposed to the core traditions and goals of copyright. See discussion of national treatment, p. 63 infra; see also the European Court's decisions in the Magill litigation, which may cast some shadow on copyright owners' rights to control adaptation of their works to new purposes at a time when such control is increasing in importance.
- 22 Questions Concerning a Possible Protocol to the Berne Convention, Part III. New Items, BCP/CE/III/2-III, para. 104 at 29-30 (March 12, 1993). However, the Memorandum's related suggestion that a right to remuneration rather than an exclusive right may be particularly appropriate in case of "mass uses" seems at least overbroad and premature. See text and fns. 16 and 17, supra.
- 23 Questions, etc., fn. 22, supra at paras. 103-105, 112. See also, Questions Concerning a Possible Instrument on the Rights of Performers and Producers of Phonograms, INR/CE/I/2, para. 49 at 16.
- 24 A new slant has been given to private use by those who argue that "internal use"--copying without distribution for use within an institution or company--must be permissible. This contention is no more compatible with the Berne Convention (see fn. 22) and has rightfully been rejected. See, e.g., AGU v. Texaco, Inc., fn. 4, supra.

- 25 See, e.g., U.S. House-Senate Conference Report on the Copyright Act of 1976, H.R. Rep. No. 94-1733, 94th Cong., 2d Sess. 72-73 (1976) (Guidelines for permissible interlibrary copying inapplicable where "the present practice on interlibrary loans and use of photocopies in lieu of loans [is] supplemented or even largely replaced by a system in which one or more agencies or institutions, public or private, exist for the specific purpose of providing a central source for photocopies").
- 26 Cf., generally, Baumgarten, Gorman & Meyer, Preserving the Genius of the System: A Critical Examination of the Introduction of Moral Rights Into United States Law (September 11, 1989; Submitted to Subcommittee on Patents, Copyrights and Trademarks of the Senate Committee on the Judiciary, September 20, 1989).
- 27 See Questions, etc., fn. 20, supra, Part III at pp. 25-34.
- 28 IPCC Statement on Legal Implications of the Creative Role of the Publisher, as submitted to WIPO, June, 1993 at 3.
- 29 "Copyright protection is vitally necessary to the dissemination of scientific articles ... [and] is essential to finance the publications that distribute them. Circulation of such material is small, so that subscriptions must be sold at very high prices. If cheap photo-duplications could be freely made and sold at a fraction of the subscription price, [the journal] would not sell many subscriptions; it could not sustain itself, and articles of this sort would simply not be published. And without publishers prepared to take the financial risk of publishing and disseminating such articles, there would be no reason for authors to write them; even if they did, the articles would fail to achieve distribution that promoted the progress of science." AGU v. Texaco, fn. 4, supra at 16.
- 30 Somewhat paradoxically, the simplicity of cross-border transmission of copies of STM journal articles by pouch, fax and computer network does require some legal fragmentation of markets when the source and receiving jurisdictions have substantially different legal regimes and importation of paper or electronic copies undercuts the rights of national publishers and their collecting society. See Statement of the Association of American Publishers on Cross-Border Document Delivery (1993); see also documents of IFFRO Working Group on Cross-Border Relationships (contract relationships among RROs).

ALTERNATIVE FUTURES FOR SCIENCE AND TECHNOLOGY

by

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There are a number of important points to consider when pondering the imponderable future of scientific and technical information.

- What is scientific and technical information, anyway? And what is it likely to become?

- What changes can we anticipate in the organizational dynamics of scientific and technical activity that will affect the future of the information that is a major part of its products?

- What does all this have to do with scientific and technical human resources issues, particularly education and training?

- What does all of this bode for the future of the U.S. economy?

First, what is scientific and technical information?

Many of us think of scientific and technical information as the books, monographs, and peer-reviewed scientific and technical papers that make up one part of the core of this material. However, there are many other kinds of materials that are relevant. In a recent commissioned study of the Library of Congress, Bonnie Carroll, a premier STI consultant, suggested that STI includes not only books, monographs, and peer-reviewed articles, but also technical reports, technical memoranda, technical notes, letters to the editor, dissertations, Government documents, conference presentations, electronic conferences, special interest group bulletin boards, seminars, trade show exhibits, technical exhibits, S&T statistical indicators, technical manuals, trade fair catalogs, R&D proposals, requests for proposals, requests for information, research in progress summaries, budgets, trip reports, proprietary information, trade secrets, S&T statistical indicators, technical manuals, descriptions of manufacturing processes, inventory control, productivity control systems, laws, hearings, incident reports, patent applications, trademarks, copyrights, standards, specifications, textbooks, laboratory manuals, curricular materials, lecture notes, laboratory notes, and many others.

Access to "grey literature," generally defined as materials other than books, monographs, and peer-reviewed materials, is particularly perplexing, in spite of the emergent grey literature databases, such as those produced by the National Technical Information Service, the European Association for Grey Literature Exploitation, and others. But beyond grey literature, there are laboratory notebooks, graphics, software, electronic mail, and other materials that are even more inaccessible.

One of the things that makes the current era of scientific and technical information development so interesting is that all but a small fraction of these materials are expressed in an electronic file at some point in their development. The publication process is increasingly computer-based, occasional papers and technical reports are typically developed on desktop computers, lab notebooks are kept on them, and observational data are routinely stored in machine-readable files.

The electronic age is not the future of scientific and technical information, it is its present. Indeed, with the broad definition of what comprises this corpus of information, it can be confidently stated that most of it is electronic ... not in the future, but right now ... today.

Well, then, what is this already electronic body of information likely to become in the future?

If we construct an STI spectrum, with one end in the standard peer-reviewed journals and the other in electronic mail distributed in a networked environment that is typically the Internet/NREN, several interesting observations can be made.

First. The appearance of new discoveries, theories, and/or other significant developments in the peer-reviewed journals lags behind the point in time of the innovation by six months to two years, while electronic mail communicates the innovations immediately, indeed often even as they are taking shape.

Second. The credit for innovations in the bureaucratic structure of science--whether in universities, industrial organizations, or government labs--is still rooted in the peer-reviewed literature. Electronic journals, which are growing in number, are typically not considered by one's deans or directors. There is, of course, an exception for patentable profitable processes and devices in industry, where, indeed, publication is proscribed, as is the case with secret work in government. It can be even more difficult to secure authorship credit for innovations first communicated in electronic mail.

Third. In some fields there is an apparent development of certain hybrids. One example is the robust electronic bulletin board posted for specialists in a particular discipline. Persons may file trenchant scientific questions, mysterious and yet unexplained findings that do not fit existing theoretical formulations, glimmers of new theories, and other potentially groundbreaking material on these facilities, instantaneously sharing them with colleagues. These represent a kind of on-going electronic conference that has, I am convinced, greatly increased the rate of development of some fields, and indeed some professional reputations have been significantly enhanced by participation in these networked colleges.

Fourth. On the downside, it has been suggested that electronic mail invites intellectual piracy. Publication without printing in peer-reviewed journals opens authors of new ideas to thievery. Some authors have suggested that bad experiences in this regard have made them reluctant to share anything really important on the Internet prior to traditional publication. It may be the case, then, that the new telecommunications capabilities dampen the rate of scientific progress in some ways.

What will scientific and technical information become in the future?

It is quite likely that some means will be devised to protect the intellectual property rights of authors of innovations in the immediacy of the fully networked scientific and technical information environment. When this problem is more fully engaged and adequately resolved, new formats for scientific publication will rapidly emerge in addition to the maintenance of traditional ones. These will be characterized by a number of kinds of scientific and technical information made available instantaneously throughout the scientific and technical community, for example:

- kernels of theories, ground-breaking but not fully developed new scientific explanations;
- observational data from replicative or innovative experiments;
- new methodologies, presented as text, in full-motion video, or as software;
- information finding aids that can search beyond traditional peer-reviewed publications, beyond grey literature, down to the lab notes and raw observational data level, where these materials are made available.

Because these anticipated changes are potentially so profound, we turn now to the second question.

What changes can we anticipate in the organizational dynamics of scientific and technical activity that will affect the future of the information that is a major part of its products?

When the intellectual property rights issues are resolved and members of the scientific and technical community can more freely communicate without fear of losing credit, the way that science is conducted will be radically transformed. And some aspects of this transformation are likely to take place very quickly.

If every researcher with access to the Internet is able to, in effect, look over the shoulders of colleagues working in the same field, any significant innovation will tend to be propagated and adopted far more rapidly than is now the case. This will speed the rate of discovery and of the application of innovations.

If every researcher with access to the Internet is able to be current with respect to the state of knowledge on an almost up-to-the-minute basis, the reexploration of blind alleys will be sharply diminished.

If every researcher with a theoretical interest and access to the Internet is able to quickly review the current state of empirically based knowledge, the art and productivity of theory building, the essence of scientific development, will be greatly enhanced. The community of theoretical scientists will be expanded and enriched.

Indeed, the scientific community will increasingly become first a set of broad collaboratives walking toward a single broad collaborative, blurring disciplinary boundaries, especially in the applied fields such as engineering and medicine.

Overall, it will be possible to get far more productivity for a given resource level than we now achieve with the current professional and organizational practices in these disciplines.

And the rate of application of new scientific findings to industrial production and government administration will be greatly increased, because these communities, that overlap with the scientific and technical one, will have immediate access to key elements of STI of relevance to their work.

So far I have focussed on the research and development component of the scientific and technical endeavor in these speculations about the future of science and technology. But there are other vital issues. In particular:

What does all this have to do with scientific and technical human resources issues, particularly education and training?

For the last few years there has been a significant controversy about future U.S. human resources needs in scientific and technical fields. On the one hand, we often hear that the achievements of our young people in science and mathematics at the K through 12 level lag behind those of youngsters in some other countries. On the other, we hear that we have a severe shortage of scientists and engineers. There are a couple of things that should be said about these allegations.

As for our elementary and secondary school science and math achievements, while there may be some real problems here, the international comparisons may be misleading because the average scores of students in our universal free public education system are compared, in some of these tallies, with students in other countries with far more selective entrance into academic secondary schools. In effect, all of ours are, in some instances, being compared to the best of theirs. While we do have some problems, the disparities in achievements between our country and others may not be as great as some would imagine.

As for the alleged shortage of technical people in the U.S., it is impossible to make any responsible meaningful generalization across all fields and all levels.

At the baccalaureate and above levels, in some areas there is indeed a shortage, as manifested in the minuscule pool of trained persons available to employers in these areas. In others, there are surpluses.

At the technician level, there seems to be a more pervasive shortage across many fields.

But one thing is clear in this: viewed as a single array of systems, our national training mechanisms in science and technology are inefficient in the sense that large quantities of resources are put into training persons who never become practicing scientists or engineers because they do not complete baccalaureate or above training in these areas. And many others, who might have become excellent technicians, are not afforded adequate educational opportunities.

What does this have to do with science and technology information?

The inefficiencies in our national S&T education and training systems may be reduced by more adequate integration of appropriate aspects of scientific and technical information systems with the education and training process.

One major problem in this realm is that, for the most part, what is presented in classroom textbooks is one or two scientific generations behind the current state of knowledge.

Another is that instruction in science, engineering, and mathematics is much more daunting than is necessary, a fact that is increasingly a part of the received knowledge among science educators.

There is also a continuing science literacy deficit in the public and among science policy-relevant politicians.

All of these issues, and many others, may be productively addressed with intelligent innovations in the availability of scientific and technical information. With more adequate availability of information on the current state of scientific knowledge and a shortened publishing cycle, authors of science, engineering, and mathematics teaching materials will be able create more current representations of scientific knowledge for students and other neophytes. Likewise, instructors in these fields will have far greater access to successful pedagogical strategies than is now the case. And with new technical information products for lay persons built on more readily accessible scientific and technical information, the science literacy issue can also be addressed.

What does all of this bode for the future of the U.S. economy?

It can easily be imagined that the potential positive impacts on the U.S. economy are manifold.

First. As noted earlier, we will very likely be able to get far more scientific and technical productivity out of our R&D dollars than we do now.

Second. The application of new discoveries in the creation of new products and services is likely to be far quicker and more certain than it is now in our economy, which will enhance productivity in the affected economic sectors.

Third. Scientific and technical education and training are likely to become more efficient, with significant improvements in the competitiveness of the most important factor of production, our workforce, which will be far more current in its technical knowledge and relevant skills.

The future of science and technology is, therefore, strongly related to the future of science and technology information. It appears that this future is both glorious and perplexing. Its most perplexing aspect is the problem of balancing information availability with the protection of intellectual property rights, an issue that is, I believe, not entirely foreign to this group.

I am optimistic that an appropriate balance will be struck between these requirements, so that the important prospective developments that I have sketched in these remarks can be full realized in the proximate future.

**DIGITAL RECORDING TECHNOLOGIES AND INTELLECTUAL PROPERTY:
PROMISES AND PITFALLS FOR DEVELOPMENT**

by

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1. Introduction

The promise of digital technology is based on the inherent qualities of the technology:

- Objects like text, data, voice, graphics, video and other images and computer programs may be digitally recorded on a common medium, such as an optical disk. They may also be stored on data banks of computer systems for online access.

- Using computer software, it is easy to modify and manipulate the objects, e.g., changing of size, shape, style, color, aspect ratio, etc. The fact that computer programs may be embedded in the same media as the other objects, means that not only can one distribute the digitally recorded objects but also define arbitrary relationships between them.

- It is relatively easy to encrypt and compress the objects. Digital representation, recording and transmission is always encoded. Therefore, the owner of the technology can restrict access only to authorized users. Even if the dissemination is by direct broadcast satellites over a wide area, the receiver may need precise de-scrambling devices or appropriate software to correctly interpret the information.

- Transmission over communication channels is possible without loss of quality.

- Digital recording representations have a natural ability to be compatible with new technologies and a diverse variety of hardware platforms and software environments.

- The cost is low for the level of quality achievable. The objects may be copied and reproduced without loss of quality, and their quality may even be enhanced and improved.

- Digital technology may be used to monitor usage of all sorts of processes and events including the objects recorded using the technology.

1.1. A digital world

Due to these innate qualities, information technology is moving us towards a digital world. Digital recordings will bring a wider range of products into the market, like music, literature, software, paintings, architectural plans, designs of computer chips and other industrial products, chemical formulae, patent descriptions, trademarks, logos, photographs, films, video recordings, games, value added services, etc.

Bill Gates, Chairman of Microsoft Corporation, calls it "information at your fingertips,"¹ a global vision, in which "whatever type of device you are working with, from wallet-to wall-size, you'll be able to easily access the information in which you are really interested. Technology leaps have led us to expand the vision to include all types of information--sound, video, numbers, text, animation and graphics--and to envision mixing those data types without users having to think about their boundaries or to fire up different types of applications. This expanded vision, multimedia at your fingertips, will soon become a reality."

Digital information will be deliverable to your home, office or mobile platform using sophisticated high speed communication channels. Such gigabit networks will operate at the internal bus speed of today's computers. New ways will be found to market and distribute intellectual property. This combination of technologies and marketing opportunities will create a paradigm shift.

For example, the pervasive use of these technologies could see the gradual demise of printed matter like books, newspapers, magazines, instruction manuals, encyclopedias, dictionaries, etc. All these would be accessible on demand from digital libraries. The same on-line access would be readily available for musical and artistic works, video recordings, films, slides and photographs, folk and tribal art, computer software and multimedia arrangements. Plays, concerts, operas and other theatrical events would be within the reach of your fingertips as would games, and educational and testing material. On-line publishing could become the norm.

This will change the roles of the existing players in today's intellectual property marketplace, for example, authors, musicians, composers, directors, publishers and retailers. Much as calligraphers were rendered redundant by the invention of the printing press, digital technologies will create new redundancies--and new opportunities.

1.2. Impact of artificial intelligence (AI) and computer generated works

AI systems may create their own original works of literature, design, music, poetry, art, etc. This raises a number of issues regarding ownership and neighboring rights. According to Samuelson,² "When one thinks of how widespread are uses of computer programs to generate other works--both written works and industrial products--one can see that the stakes are high and the statute ambiguous, the stage would seem to be set for a hot contest." This is true not only for commercial interests in USA, but also worldwide.

One of the frontier areas of computer science is that of neural networks. Existing copyright laws have not addressed the issues relating to creations produced by other than human authors and designers. Andy Johnson-Laird³ and Gerald H. Robinson⁴ have discussed some of the questions that arise in this regard. Neural networks acting as front ends or as more sophisticated pattern recognition engines, can undoubtedly create, manipulate and analyze digitally recorded objects.

Data generated from remote sensing devices mounted on earth satellites, process instrumentation in factories, surveillance equipment and other such devices has its own value. It is not at all clear who holds the rights in such data.

AI systems will initially assist in creating such forms of information--and eventually become the creators of such intellectual property.

1.3. Classification of digital recordings

We are accustomed to thinking about narrow classifications of objects. We buy a book, a musical recording or a software package. Such classification affects not only intellectual property laws but also procedures, laws and bilateral or multilateral agreements relating to tariffs and taxation, imports and exports, manufacturing and distribution, marketing and licensing. With multimedia recordings we will have to allow for trade and commerce in multiple objects, for example, the case of rental of computer software, discussed below.

There are so many types of objects which can be stored as digital recordings that classification into traditional categories becomes difficult. For distribution purposes, it is likely that multiple types of works will be combined on one medium or in one library. This is due to the greater effectiveness and utility of multimedia presentations. This will affect how we design classification systems for such multimedia combinations.

2. Intellectual property issues

There are a number of unresolved matters relating to intellectual property in connection with software and artificial intelligence. Additional intellectual property issues will arise out of the extended digital scenario. New ways of defining, detecting and enforcing economic, neighboring and moral rights will have to be designed to meet the new paradigms.

2.1. Patentability of multimedia objects

Do digital recordings of multimedia objects fall potentially into the domain of patent law? There have been judgments in the USA upholding the patentability of computer software and algorithms. There is also opposition to this concept of patentability of software and algorithms.^{5,6} The evolution of this issue has important ramifications on the relationship between international intellectual property conventions and multilateral trade agreements.

2.2. Look and feel and virtual reality

Similarly, opinions are divided on the treatment of the look and feel of software and the extent to which reverse engineering is allowable. This debate will need to cover a much broader scope when we start examining the look and feel issues relating to multimedia recordings and their sensory representations. For, multimedia recordings will allow us to experience images, sound, touch, and much more through what are referred to as virtual reality systems. It is mind boggling to think of anyone copyrighting either the look and feel of a virtual reality system or the emotions it might generate! What would we copyright?

2.3. Determining infringement

The physical manifestation of the sound, video, sensation and artistic recordings requires reconversion to analog form. This is due to the fact that human aural, visual and touch perception uses the ears, eyes and skin which behave like analog sensors. The copyright for such representations can, perhaps, be only be at the analog level, because those are the only representations at which the artist or creator or judicial systems can understand them. This has a bearing on our ability to prove infringement, because the recording will be digital.

Software has been a digitally recorded object. This has made it easy to copy. Hundred percent accurate copying is a necessity in the software field. Other literary and artistic works have only now reached the stage of perfect mass digital copying and distribution. In the context of the protection of intellectual property, they are likely to face the same kind of problems faced by the software industry in proving the infringement.⁷ At the digital recording stage the physical representation can change depending on the encoding method, compression and encryption algorithms as well as the type of digital recording conventions used. There is no unique way of representation.

2.4. Rental of digitally recorded works

Under the model laws proposed by WIPO,⁸ and the copyright laws of some countries, rental of computer software is not permitted. However, rental of other copyrighted works is allowed. If software is inseparably intertwined with the digital recordings, does it mean that one may not rent the media containing such software?

2.5. Pay per use

You may have to pay for every use of a digital recording stored in an on-line data base. The commercial transaction could be more like buying electricity, than buying a book. You could think of it as an information utility. I am not quite sure how this is different from rental.

The charge could be based on the utilization of the computing and communication resources, the amount of information accessed and the value of the information. You may have to pay for each access. You could also download the information into your own local digital storage device for subsequent use, if your computer software and the format of the digital information allows you adequate functionality to do so.

Sale and purchase, import and export of such on-line objects may, thus, not be a one time affair. You may have to subscribe to the supplying utility, pay for the access to and the volume of information utilized and for the communications channel every time you access the information. This could be much like access to existing on-line services, with the possible difference that the objects accessed are today covered by a variety of laws and procedures.

2.6. The software paradigm

It is useful to understand the problems that have been created by the inclusion of software in the copyright laws of many countries. Potential land mines may be encountered if we try to provide blanket coverage to combinations of digitally recorded objects under the copyright laws.

Computer software has a nature which is different from that of other intellectual properties. It has a utilitarian value, and its worth often lies in its usage and not merely in the look and feel it is designed to create or even the text representation. More details of the issues relating to the laws of intellectual property and computer software may be found in the proceedings of various conferences organized by WIPO.⁹

2.7. Multi-national, multi-author, multi-media

The digital storage devices could be located in one or more countries with users from many countries accessing the intellectual property. There may be automatic translation equipment for language translation or subtitling to make the final presentation acceptable to the user in his or her native language. Thus, a film in Hindi could be translated automatically into English for the natives of the British Isles.

The intellectual matter in these digital on-line libraries would be created by authors and editors located in one or more countries. You could add your own intellectual creation to the library by uploading it to the digital repository. Your digital creation could use reference material and adaptations from existing objects in the digital library. You could even distribute specific objects to a distribution list or place it on a bulletin board for comments and feedback from the public or a selected closed user group. The acceptance or distribution of your work would attract a charge and earn you a royalty based on usage.

The storage system may even be organized in a way that different components of a digital recording are stored in different countries. Under which country's laws are these components and the whole to be protected? There may be multiple users in different countries. It would be important for the author, information provider and the user to know which law applies. Internationally consistent legislation will have to be designed to protect the rights of the creators.

2.8. Prevention of second and subsequent copying

With the advent of recording digital optical disks and other forms of high capacity digital storage devices, pressure was brought to bear on drive manufacturers to encode the first copy of the musical work so that the second and subsequent recordings are impossible to make from the first copy. Will this restriction be extended to other literary and artistic works and computer software? From experience we know that there is market resistance to imposing such restrictions on computer software, and the Not Copy Protected (NCP) label is preferred by consumers. This resistance is not limited to computer software.

Computer software needs to be copied for backup and other purposes. Many multimedia digital recordings are likely to have a more utilitarian nature than the traditional unimedia recordings. I suspect that some forms of multimedia will also need to be copied for backup purposes, for example, to retain the original form while experiments are made in changing the form, content and relationships of the multimedia objects. Will this make the NCP label desirable for multimedia recordings also?

2.9. Who is the first to create?

In case of dispute, the first to create has the economic and other rights on copyrighted works. Date stamps on paper documents usually provide the proof of the date of creation. With digital recording of the intellectual property, and the movement towards a paperless society, the date and time stamp of the file in the computer storage can become crucial. In most computer systems, the operating system of the computer puts a date and time stamp on every file stored in the system. However, it might be useful to note that the date and time associated with the file is usually the date of the last update and not the first date on which the file was created. Furthermore, it is not too difficult to manipulate this date and time stamp. Therefore, there is a need to define a practical method by which the first to create is clearly provable and that his rights are protected. Some patent laws have moved towards the first to file practice. For copyrighted works this would probably not be practical.

2.10. Derivative works

It is so easy to make derivatives from digital works. Thus, you can download a graphic image, and manipulate it. This manipulation can take the form of changing its shape, size, aspect, orientation, color, shading, selective addition and deletion, cutting selected sections and merging them with other objects, etc. Where do you draw the boundaries of "derivative works"?

In today's world, you give a plain sheet of paper to a child with some colored crayons. The plain paper is not copyrighted. Whatever the child produces is created from imagination. With computers and multimedia objects you will have the potential of giving the child an electronic canvas containing a practically unrestricted range of sounds, images, text--along with tools which allow creativity to flow along dimensions and directions we haven't even begun to understand. Instead of plain paper, we now provide a multimedia canvas on which the starting point may be selected from a very large subset of the creative works of mankind.

In a book, you can copyright the whole book, or parts of it like a chapter, a paragraph or even a notable sentence. However, you cannot copyright individual words or even parts of sentences. The question arises as to what are the parts of other objects that you can and cannot copyright? What happens to this concept when you combine multimedia objects?

There is also a need to address the issue of rights in knowledge and analyses derived from use of the digital recordings. To what extent are these new objects to be treated as derivative works?

Derivative works may also be produced by systems incorporating artificial intelligence and neural networks. This is an added complication, and is discussed earlier in this paper.¹⁰

2.11. Moral rights

The Berne Convention requires member countries to grant to authors the right to claim authorship of the work, and the right to prevent any distortion, mutilation or other modification of, or other derogatory action in relation to, the work which would be prejudicial to the author's honor or reputation. These rights are required to remain with the author even after he has transferred his economic rights. We should also consider the moral rights of the user of the intellectual property which may, for example, arise from deliberate disinformation and prejudicial withdrawal of the work.

Due to the greater utilitarian value of digitally recorded multimedia objects, it may be necessary to restrict the rights of the owner or provider to withdraw the works. The impact of withdrawal of a commercially valuable information service could be more severe than that of a book going out of print. Such withdrawal of information could be catastrophic for individuals, firms and countries. Thought needs to be given to how the licensing of such objects ought to be done. Software licenses sometimes have an escrow clause to protect the investment of the licensee.

With digital hardware technology, appropriate software and the easy on-line accessibility of multimedia objects, it is easy to manipulate images, modify text, translate to different languages, rearrange objects and presentations. Moral rights of the author may be more difficult to protect with this technology. It will be relatively easy to adapt, mutilate and parody. There is a need to review the laws and conventions and redesign them to define the boundaries of transgression for adaptation, repackaging, translation and transformation.

A new fair use doctrine may have to be evolved for the new technologies and their products and adaptations, including the added question of parody as a special form of infringement of the moral rights of authors.

2.12. Collective administration

Will we have societies of multimedia performers? Existing performing rights societies will need to address the new issues arising out of multimedia objects being intermixed in performances, recordings, etc. The performers rights may now have to be shared amongst performers from different disciplines according to some measure of the contribution of each to the final work. This could become fairly difficult because the enjoyers of the multimedia works may perceive differing values for the works depending on their personal preferences and the front end intelligence contained in their hardware and software. Furthermore, the works may be acquired in the form of recordings on compact disks or dynamically over on-line networks. Since the works may be accessed from on-line libraries in various countries by users in other countries, this can further complicate matters. There is also probably a case for allowing computer programmers to share some of these earnings.

3. The potential for developing countries

Digital technologies have very significant potential for all countries. Developing countries have an opportunity to leapfrog the stages of economic development which are characterized by information starvation. Their rich cultural heritage can be preserved on high quality digital recordings for posterity. This potential can be realized only if appropriate investments are made in infrastructure development.

Digital technology will tend to homogenize the world for better or worse. Today Coke and Pepsi are available practically all over the world, as are cable television telecasts on CNN and BBC. Entities like businesses, educational institutions, governments, social organizations, students, investors and others use networks for electronic mail, bulletin boards, information access, etc. This has already significantly changed the way of working and thinking, relatively more so in the developed countries. The developing countries also want the benefits of the linkages to the global economies. The well worn cliché, information is power, has taken on strategic overtones.

The wider use of on-line digital recordings will further extend this revolution. It is likely to take the world more towards the ideal free markets of economic theory. It must be emphasized that the impact of digital technology is not merely related to the laws of intellectual property and the sharing of the spoils amongst the various economic right holders, it also raises significant issues of development.

3.1. Technology dependence

Developing countries are technology followers, dependent on the developed countries which are the technology pacesetters. This dependence lies in the areas of pricing and access to:

- technology;
- products and services;
- databases containing the digitally represented objects;
- delivery mechanisms to the user's home, office or mobile platform;
- new marketing and distribution methods for intellectual property;
- training and support to allow effective use.

There will be widespread economic dependence, and occasionally, mission critical dependence on information in our globally interlinked economy. This dependence may aggravate the issues relating to trade agreements. It may also raise additional issues of liability, malpractice, insurance, etc. As mentioned earlier in this paper,¹¹ there is probably a need to evolve a set of moral rights for users in addition to those of authors.

3.2. Desire for economic independence

Many developing countries have a fear of the information tap being shut off due to changes in global strategies of the technology leaders. They have already experienced this in the fields of computers, nuclear and space technology. Information technology has the characteristic that it cuts across almost all fields of science, technology, arts and the humanities. The strategic impact of sudden denial of access is something that worries many countries--and if it does not, it should! I have been assured by some friends that this is very unlikely and that market forces will prevent the occurrence of such events. I wish I could share this optimism.

For example, US and Japanese firms sell Global Positioning Systems (GPS), portable devices, which can tell you where you are anywhere in the world. The models sold to other countries and to commercial customers are programmed to give a poorer accuracy than model supplied to the US military. And this is done entirely in the software of the gadget. One hopes that commercial information in digital recordings will not be filtered to different levels of accuracy for different countries and users. This tendency may tend to aggravate strategic and trade related issues between nations and power blocks and could force us to rethink the fundamental and hallowed premises of intellectual property laws relating to universal economic rights of the owners of intellectual property.

Thus, intellectual property rights need protection, not only for the authors but also for the end users of the information. Polluted waters have a very significant downstream effect but little impact, if any, at the source of the river.

3.3. Laws and treaties relating to intellectual property

The distribution and use of digital recordings will encompass practically all the forms of intellectual property, which are protected by different international treaties and conventions signed in Berne, Brussels, Paris, Rome, Washington and other places. These different conventions cover copyrights, semiconductor chip designs, the protection of performers, producers of phonograms and broadcasting organizations and the distribution of programme carrying signals transmitted by satellite, etc.¹² We cannot look at a digital recording and state that the following bits are covered by the Berne Convention and another subset of bits by the Washington Treaty.

In addition to these international conventions, there are bilateral and multilateral treaties amongst groups of countries. The treaties are essentially concerned with trades and tariffs, and less so with intellectual property consistency. There is a major concern that rights in intellectual property, so carefully cultivated through an evolutionary process over decades, may be turned into a chaotic nightmare through these trade arrangements. This could act as a barrier to the orderly evolution of intellectual property laws.

An example of this concern is brought out by Narasimhan¹³ who highlights the dangers to the software industry in India if the Dunkel draft is accepted under the current GATT negotiations. He stresses that there are moves in USA to patent software. He warns: "... by accepting the Dunkel draft, we shall be signing away our rights to independent opinions with reference to legal practices in this country concerning software." He further states: "If the Dunkel draft is accepted ... it would no longer be a matter of mere academic interest whether software patents in the US automatically include intellectual property right protection on the algorithmic content of the software that is patented."

Such concerns need to be carefully discussed, specially in the context of multimedia digital recordings. They have a vital importance for all countries, not only the developing ones. Such trade agreements also affect other new forms of intellectual property like biotechnology.

3.4. Security and privacy

Since all kinds of objects will be included in digital recordings, there are bound to be some restrictions on transborder data flow, specially across international boundaries. There are differing perceptions on this issue. However, for reasons of politics, trade, national and personal security, corporate and personal privacy, and tradition, access is likely to be restricted. Such restrictions, which could, perhaps, result from the hypersensitivity of governments, come in the way of using information for development.

3.5. Appropriate pricing

New digital technologies and their delivery systems are expensive to develop. They have high risk with potentially short technology life cycles. Therefore, it is understandable that the price of transferring these technologies is high. The pricing tends to be geared to living standards in the developed countries. It is very difficult to justify the import and use of such technologies in the developing countries, unless the pricing is designed to make the cost benefit ratios attractive for local market conditions.

It is, therefore, necessary to develop pricing structures which bring the technology within the economic reach of users in different countries. This price should bear a relationship to the productivity benefits achieved by the use of the technology in economies having different standards of living. US\$ 500 is a small part of an American's salary, whereas it can be 3 times the monthly salary of an engineering graduate in India. As a case in point, the pricing model of books, which have different editions and affordable prices for different geographic regions of the world, seems to have worked well.

3.6. Need for better infrastructure

For the effective use of digital technologies, developing countries must develop adequate legal, technical, trade, economic and educational infrastructures.

3.6.1. Legal infrastructure

Laws relating to protection of intellectual property rights for computer software, artificial intelligence, information databases and digital recording technologies are still evolving, even in the developed countries. It will take many years before reasonable protection can be given, in a practical sense, to the products and services based on these technologies. The developing countries are still trying to understand these technologies, and legislative developments are in their infancy. At the same time many of them are being subjected to pressures to conform to intellectual property perceptions of other nations. This is, unfortunately, leading to a political backlash and a clouding of the public debate on the intrinsic need to have a decent set of laws for intellectual property. This is exemplified by Narasimhan's¹⁴ call to modify the laws so that they protect only the software developed in India and to encourage reverse engineering of imported software packages.

Developing countries will have to rationalize their laws, policies and procedures relating to trade, licensing, taxation, alliances and intellectual property.

3.6.2. Technical and management infrastructure

Developing countries lack the infrastructure in the areas of telecommunication networks, value added service providers, and trained human resources. There is also a relative degree of management ignorance about the strategic benefits of digital technologies. Organizational methods are also relatively antique.

Even for the developed countries, says Bill Gates,¹⁵ "while computer and consumer electronic companies have a leadership role to play, others must step in, too. Cable television and telephone companies face the challenge of building the required digital infrastructure. Content companies must author their information in interesting and enticing ways. Traditional PC software developers have to create the basic motivating applications and tools for the creative and content communities. And systems software companies must develop the underlying software that links these devices to each other and to the vast array of personal computers that are already an established element of the digital infrastructure."

Digital recordings provide us with the training technology to help in overcoming some of these barriers.

3.7. Strategic alliances

One of the ways of ensuring continuing access to the technology is for firms in developing countries to form strategic alliances with technology leaders in the developed countries.

They can use comparative advantage to participate in the development and application of digital technologies and the services based on them. This comparative advantage of developing countries lies in the areas of low cost human resources and, perhaps special aptitudes or access to data. This can work to the mutual advantage of the partner firms and countries.

4. Conclusion

As we digitize more and more of our intellectual creations, we will have greater access to more forms and combinations of information. This will create new products and services. It will also create new issues relating to patent and copyright laws. Determination of copyright infringement may become more difficult than it is for computer software. The roles of various players in the intellectual property marketplace are likely to change quite significantly.

Developing countries can derive enormous economic and cultural benefits from the use of digital recordings. There will be widespread economic dependence, and occasionally, critical dependence on digitally recorded information in our globally interlinked economy. Amongst the developing countries, there are fears of economic domination by countries which control access to information resources. There is probably a need to evolve a set of moral rights of users, both individual and corporate, in addition to those of authors and the regulators.

There is a need to recognize that these new technologies raise issues beyond those of intellectual property laws and sharing of the spoils. There are significant developmental issues to consider.

Creativity will become more common, because everybody will be able to use existing digitally recorded works as their starting point. It is not just the few creators who will need protection from the masses. Information will be available at everyone's fingertips. The users also need immunity. Perhaps (in keeping with Register Ralph Oman's introductory reference to the celestial jukebox), we need to reflect on the saying of a 16th century Indian poet, Abdul Rahim: "A tree does not eat its fruit and a river does not drink its water."

NOTES

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- 10 See section 2.4.
- 11 See section 2.13.
- 12 WIPO, *Background Reading Material on Intellectual Property*, WIPO Publication No. 659(E), 1988.
- 13 R. Narasimhan, *A Sure Recipe for Disaster*, *Economic Times*, New Delhi, January 20, 1993, Excerpts from a lecture delivered at the 80th Indian National Science Congress, Goa, January 1993.
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**THE MUSIC INDUSTRY AND TECHNOLOGICAL DEVELOPMENT:
ARE WE WINNING THE WAR?**

by

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I open my remarks today with an apology for my use of one of the most overused, overblown, overly dramatic, and least intellectually honest expressions found in public statements. Today we stand at a crossroads in regard to the future direction of the recording industry. But it's true. I say this guardedly, for the foregoing reasons, and only because I can conceive of no situation where its use is more appropriate.

Digital technology, and in particular digital transmission systems, has advanced to the stage where acts of broadcasting have become more akin to means of distribution and less like our notion of traditional broadcasting. Digital transmission promises to replace less efficient forms of distributing information. Everything capable of being reduced to zeros and ones, whether literary text, audio or audio-visual signals, or other information, can be delivered to the home without manufacturing costs or environmental waste.

Industries that have produced and manufactured cultural goods will become service, rather than goods, providers. These developments should be encouraged, for they will promote economic efficiency and the public's access to cultural productions, while at the same time reducing the waste and costs associated with manufacturing. Increased efficiency should in turn lead to increased investment in creative output, thus resulting in the production of more diverse classes of recorded music, including traditionally non-profitable genres in which the dim prospect of recouping investment has served as a disincentive for distribution. Elimination of these costs could enable record companies to produce recordings, even with the knowledge that the potential market is extremely small. Clearly, digital technology has the capacity of giving rise to a renaissance of musical production, with niche marketing of diverse entertainment made possible on an unprecedented scale. The term "narrowcasting" could take on a whole new meaning in terms of music delivery systems.

I opened my remarks with talk of a crossroads, and I would like to briefly describe what lies down the other path ... I can only search for words to describe a deafening silence. Digital transmission of signals, since they can "deliver" the product created by a record company with the acquisition of a single digital sound carrier such as a compact disc, can and, I assume, will someday replace the sale of products embodying the recorded performance. Economic efficiency and environmental values, as described earlier, suggest that this will be the future means of delivery. Suppose, however, that rather than leading to increased investment in the production of recorded music based on these new efficiencies, that these new services operated outside the control of the company producing the recordings and resulted in little or no financial return to the record company and to those who are involved in the creation of a recording. In this case, digital delivery would siphon off and eventually eliminate record company profits as sales were displaced. In time, the uncontrolled messenger would strangle its host, as investment in the production of recorded music dried up.

It is, I am sad to say, down this latter path that the United States and world community are hurtling. In only a handful of countries do record producers have the ability to authorize or prohibit the transmission of their recordings. The great majority of countries grant record producers and performers rights of remuneration in respect of broadcasting, but these are not intended to address lost sales, but rather to compensate creators for a commercial use of their recordings that does not negatively affect the basic commercial value of the copyrighted work. Finally, there is a third category of countries in which record producers and performers are not only without legal protection to authorize or prohibit the transmission of their works, but are denied compensation for the use of their recorded performances. The U.S., I say painfully, is in this last category of countries.

Almost two years ago, I appeared before the House Subcommittee of the Judiciary for Intellectual Property and testified that:

"Consumers will have the ability to directly access prerecorded music and other forms of entertainment programming without leaving the home, entirely transforming the nature of the entertainment business and how different creators will be compensated. [The] Committee's task, difficult and visionary though it be, is to ensure that U.S. laws and international norms, and thereby indirectly foreign legislation, embody copyright provisions that continue to provide sufficient economic incentives for the creation and distribution of copyrighted works."

In the two years that have passed, the digital technology that I was postulating has arrived. Would-be digital satellite broadcasters have applied for spectrum allocation, and numerous companies are currently operating, on a subscription basis, cable audio services. While not yet operational, a number of companies have announced their intentions to be in a position to deliver audio on demand services within the next two years. Audio on demand is the crystallization of the "celestial jukebox" concept. It will permit consumers to separately access, and to download if they so choose, recorded music without regard to third party broadcasting decisions and scheduling. In essence, it is a record library in which copies are delivered through electronic means. It is also conceivable, that if access is sufficiently user-friendly and efficient, that copies will not be made by the consumer given the limitless ability to listen to the music of your choice--in effect the consumer already owns all of the records in the library and decides what to play by accessing the library.

As I have already said, these technological breakthroughs have the capacity of bringing with them a wealth of possibilities. The question remains whether these will be realized and how the wealth is to be shared--if at all. The answer to this question has two components, only one of which I am in a position to speak to--namely whether we will adapt analog legal concepts to an emerging digital world. The other half of the equation is the ability of engineers to develop technologies that consumers will accept. It remains to be seen whether the advantages offered by digital transmission services will be sufficiently user-friendly to represent the "future" of music delivery, but I will not speak to this point. Later on this week, you will hopefully have an opportunity to see and hear some of these emerging digital systems and you can thus bring your own perspective to this question.

Luckily, we do not need to answer this question in order to address the legal issues raised by the technology. Perhaps to some extent, our individual perspectives may suggest the relative urgency of finding legal solutions, but I would submit that the present existence and announced future plans of digital transmission systems indicate that regardless of our individual predispositions, it is essential that we establish a legal framework for dealing with these issues now.

Copyright practitioners and legislators have generally identified two underlying premises for the extension of rights. These are sometimes cited in tandem, but may in some instances lead to different solutions. One rationale for protection is that creators deserve to share in the revenue generated by the use of their works. I call this the "fairness" criteria. While it is appealing and well-intentioned, in many respects it represents a misunderstanding of the nature of copyright principles and the failure to grasp the larger economic underpinnings of copyright legislation. I will describe this in more detail a little later, but I want to point out that without exploring the economic and legal issues more deeply, this approach could simply lead legislators to introduce a series of rights of remuneration for commercial uses. The ultimate effect of this, however, would be to undermine the series of exclusive rights that form the basis of copyright and to unwittingly strangle the economic life out of copyright.

The second rationale for copyright protection is that copyright owners, as creators or beneficial owners, should be able to control the commercial uses of their works. This is truly the central concept of copyright. When viewed from this perspective, the scope of rights is not dependent upon the profits generated by the use; rather, the copyright owner has the ability to license or to prohibit the intended uses of his or her works by third parties. It vests in the copyright owner of the work the ability to determine how his work will be made available to the public, and on what conditions.

The tension between these two approaches has arisen only as a consequence of developments in technology that have permitted parties not in privity with the copyright owner to exploit the work simply by acquiring a single commercially available copy of a protected work. The consumer who purchases a prerecorded compact disc has a digital master capable of commercial exploitation, the only parameters of which are established through copyright legislation. No one would propose that an individual who acquires a compact disc should be able to manufacture copies using that disc subject only to an obligation to pay remuneration based on his profits, yet many legislators have

not had so easy a time in arriving at the same solution when that individual, rather than making copies himself, simply makes the original available through a commercial service for others to do the copying. I am referring to record rental and digital transmission, in which it makes little economic difference to the copyright owner whether the copying is being done by the commercial operator or by the end user--the only thing that the copyright owner knows is that he is no longer selling any records and that his income stream has dried up.

It is simply inappropriate to consider the profits generated by the use of a copyrighted work as the basis for determining the scope of the right. Such an approach places the copyright owner at the whim of the messenger who necessarily has a different set of investment concerns. Society relies upon the financial rewards available for the commercial use of a work to promote investment in the production and distribution of additional cultural goods. Without a sufficient financial return, people may still create music, but no one will invest in producing it in such a way as to make it widely available to the public. If the financial return to the creator/investor doesn't sustain the economic viability of the investment, we will succeed in eliminating public access to cultural production and this would eventually return us to a society marked or, more appropriately, marred by cultural elitism. Bearing in mind that only one of ten recordings under present conditions results in a net return on investment, it is clear that we as a society must allow free market conditions to establish fair value for particular primary commercial services. Governments have not heretofore established prices for goods in a competitive marketplace, and they should not begin now merely because these "goods" may be delivered electronically rather than as manufactured products.

A legislative enactment on what is viewed as "equitable" remuneration for such services not only represents unwarranted government intrusion into the marketplace, but is unlikely to promote the kind of flexibility that can simultaneously sustain continued growth of both technological development and cultural production. This is because regimes of equitable remuneration are both over and under inclusive. In operation, they prevent copyright owners from entering into zero or de minimis licensing of particular activities that may promote other important economic uses, while at the same time placing a cap on the ability to secure market rates for uses that may exhaust the economic value of the copyrighted work. This, in turn, could result in the elimination of certain socially valuable uses of copyrighted works by organizations who, under market forces, could have obtained more favorable conditions. It could also erode the economic incentives necessary for the production of recorded music by providing only a nominal return in particular uses that, as I said earlier, exhaust the economic value of the work.

With these economic considerations in mind, let me return to the legal copyright issues at hand. I have argued that creators of recorded music must have the ability to control the primary commercial uses of their works including control over digital transmission. As a legal matter, however, copyright has not traditionally made distinctions on the basis of the manner of delivery--i.e., digital versus analog, but only on the legal characterization of the class of activity. Digital transmissions are definitionally "acts of broadcasting or other communication to the public" and such rights have not traditionally been subject to exclusive rights, and have not been vested solely in the hands of the creator/investor.

Because broadcasting has been viewed as an ancillary or secondary use of the recording not affecting the primary source of revenue for record companies and performers, legislators (who would not have contemplated inserting themselves in the negotiations between record company and performer determining the allocation of risk and profit flowing from the production and sale of recorded music), have been more willing to establish statutory shares for different classes of rightsowners in sound recordings. This non-market solution also characterizes the approach of most legislators in the area of home-copying levies, again as the result of the perceived marginality of the activity and the income to be derived.

The underlying rationale for this approach has been to secure, at the margins, a more level playing field for what has been perceived as the unequal bargaining position of different parties in the creative process. It is not my present intention to address the legitimacy of this perception, for that alone would take me more time than I have been permitted here. I only point out that legitimate or not, this perception is at the heart of legislative approaches to certain economically marginal uses.

I raise these issues because it is critically important that we leave behind the baggage that has accompanied traditional broadcasting rights when we discuss digital transmission. The economics of the situation make it imperative that we do so. Traditional broadcasting currently produces about \$120 million in revenue for rightsowners, and the amount and distribution of this revenue is generally established by statute. Last year, in contrast, sales of sound recordings surpassed \$25 billion worldwide. Governments not only do not establish prices in this arena, but they do not permit us to, and no one directs the distribution of this revenue. If future "sales" are to occur via acts of "broadcasting" we clearly need to rethink existing legislation as it relates to such acts.

As described throughout this presentation, the digital transmission of recorded music, unlike traditional broadcasting, may constitute the means of delivering music to consumers. Thus, despite being an act of broadcasting or performance, digital transmission operates as a method of distribution, thus implicating reproduction and distribution rights. That this particular kind of broadcasting represents something of a hybrid becomes even clearer when one considers that recorded music may be electronically delivered in a scrambled, high-speed form, thus not capable of being audibly perceived until it is recorded and played back. There is obviously nothing "secondary" about these uses, and we must bear this in mind in defining the ownership of the rights in question.

A record company engages the services of performers, musicians, engineers, etc., to produce a record which it then distributes in the market. The parties agree among themselves as to how proceeds from the exploitation of the record will be divided, with the important caveat being that only the record company stands to lose money in this arrangement. Within the terms of that contract, the record company then markets that recording seeking a maximum return for itself and for all of the parties with a stake in its success.

The means of delivering the product should not affect these relationships. That the product may be delivered electronically rather than as a finished good should not serve as an invitation to governments to direct the distribution of proceeds deriving from its primary commercial exploitation--either by establishing rates or through the creation of statutory shares for different classes of individuals involved in the collaborative effort of producing recorded music.

Governments should ensure that the work itself--that is the sound recording--cannot be publicly performed or broadcast without the authorization of the rightsowners in that recording. The creative parties should be left free to determine among themselves how to distribute the money, just as they always have in regard to primary sources of revenue. This is true both where sound recordings are protected by copyright proper, and in countries where sound recordings are protected under a regime of so-called neighboring rights. No non-socialist country that I am aware of has legislated how to distribute proceeds from the sale of recordings. This is no time to start.

I want to close by quoting the prescient remarks of Congressman Moorhead marking his support, back in 1984, of the bill that created exclusive rental rights for copyright owners of sound recordings in the U.S. Congressman Moorhead commented that:

"The problems which creators and inventors face today is more than a clash between titan commercial interests. The larger and more difficult problem is the adaptation of old concepts of copyright law, to new and rapidly changing technologies. The problem today is that the public has access like it never had access before but the creator is not receiving his just compensation. New technologies have brought the concert into the living room but not the box office ... Nowhere is this more apparent than in attempting to adapt the present day use of phonorecords to the old copyright concept of the first-sale doctrine. The first-sale doctrine was never intended to be used as a means to create a secondhand rental market that, left alone, would eventually replace a primary sale market."

Ten years later, digital transmissions of recorded music give new meaning to the idea of technology bringing "the concert into the living room but not the box office." Just as the first sale doctrine was not intended to facilitate the creation of a rental market, nor was it intended to create a legal shield for the unauthorized digital transmission of music. We must quickly close the gaps in national legislation and international treaties that permit a party who has merely acquired a copy of a sound recording from thereafter transmitting the sounds contained therein without the authorization of the copyright owner. Failure to do so, and to do so quickly, may have dramatic consequences not just for those interested in copyright, but for society at large.

I want to briefly touch on one remaining subject before I end my remarks. I have focused exclusively on transmission of signals and not addressed technology as it relates to the ability to control unauthorized reproduction by the consumer. There are a number of reasons for this--primarily that no consumer hardware solution presently exists nor is it likely that one will be developed that will function without broadcaster cooperation whereas digital transmission systems are fully operational today--but I apologize for leaving such a void.

I will make two quick points about copying management systems and private copying levies. The first is that every country should immediately adopt them to mitigate the prejudice due to unauthorized home copying, and that all such legislation should couple existing technical limitations on copying with levies for the copying permitted by such technology. As consumer home taping has increased, providing such rights has become a critical ingredient in maintaining a copyright system in which the legitimate interests of creators are not prejudiced and a normal exploitation of the work is permitted. I have worked most of my professional life in attempting to secure such legislation in the United States, an effort that finally bore fruit just last year.

The second point that I would like to make in respect of private copying legislation is that it should not be mistakenly understood to be a complete solution to the problems raised by digital technology. All private copying legislation is premised upon the belief that it will serve to mitigate only some of the prejudice due to private copying, but not that it will be the way copyright owners get compensated for the electronic delivery of their works. They all contemplate being an adjunct to the primary commercial exploitation of the work--whether that exploitation is the licensing for broadcast or the sale of a copy. The need for record companies to have the legal ability to license acts of broadcasting is thus separate and apart from the issue of private copying legislation.

As described earlier, it is essential that the copyright owner has the ability to license broadcasting and not merely to be compensated for it. This permits the copyright owner to make distinctions between different categories of digital transmission services and to license them accordingly. The impact of the proposed transmission on the value of the work will necessarily dictate the terms of licensing. Digital transmissions that are in effect electronic deliveries will be viewed in a different manner than digital services that more closely resemble their existing analog counterparts. It may be, for example, that record companies will attempt to recoup investment for production of recorded music vis-à-vis subscription services, while simply seeking agreement from digital over-the-air broadcasters to not publish schedules or play more than a certain number of tracks from a particular recording. Only an exclusive right to authorize broadcasting--whether it is a performance or a distribution--can provide this kind of necessary flexibility.

I regret that I do not have the time to explore these issues more fully, but hope that I have provided sufficient guidance so as to ensure that the relationship between private copying levies and public performance and broadcast rights is sufficiently understood. It would be too cruel an irony were the existence of private copying levies used to justify the failure to meaningfully address the underlying issues relating to primary commercial activity. I trust that this will not happen.

THE MUSIC INDUSTRY, ELECTRONIC DELIVERY AND COPYRIGHT

by

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Introduction

Digital technology has had an enormous impact on the music industry in the last 15 years and will continue to bring significant changes well into the next century. The impact has been in two areas: first, in the creation or remastering of prerecorded music programmes and, secondly, in the storage and transmission of those programmes. Respectively, production and delivery.

This paper focuses on the second of these processes, the electronic delivery of prerecorded music programmes (hereinafter referred to as "phonograms") via digital transmission systems. In the first part, the paper provides an outline of the state of the music industry in the last decade of the 20th century and sets out in some detail the various dimensions of existing or projected delivery systems destined to become the principal medium for the dissemination of music. The second part attempts to outline a response to the challenge of technology through the combination of technical and legal measures.

The word "attempt" is used advisedly. The task of addressing this complex issue is greatly complicated by two recurrent and related themes. While the technical parameters of electronic delivery are for the most part known, the specific applications and functions of the systems in practice are not. Accordingly, no analysis to date--whether of the technology, the economics or the law--of electronic delivery has provided any convincing description of likely scenarios. The factor governing these two themes is the absence of information about probable consumer practices; these in turn are extremely difficult to predict given the interplay of consumer economics and demographics in an ever wider multimedia environment.

Notwithstanding, however, the impossibility of predicting specific applications of electronic delivery, the technical and legal systems proposed in part II of this paper to enable the music industry to respond to the technical challenges must adhere closely to the principles upon which intellectual property laws have been traditionally constructed.

Furthermore, the systems must support the creation of new cultural material by facilitating the function of a market for that material; they must therefore preserve the balance between the interests of creators and their public which is at the core of copyright systems.

Part I: The music industry and electronic delivery: the challenges

A. The music industry

The music industry has flourished in recent years due to the advent of new technology, in particular a new digital carrier, the compact disc (CD). In the last ten years (the compact disc is now almost ten years old as a commercial carrier), worldwide retail revenues from the sale of phonograms have virtually doubled, standing now at a figure of some US\$ 25 billion for 1991.

There are a number of reasons explaining this phenomenal growth but most reflect the positive consumer response to the phonographic industry's enormous investment in CD technology and the quantum leap in the quality of phonograms supplied thereby. The CD has revitalised the market for recorded sound whether as a medium for disseminating new forms of expression made possible by digital technology or as the perfect carrier for carefully retrospective and comprehensive collections of old recordings. This positive response from the public has, once again, reaffirmed the function of the producer in creating and disseminating important cultural material, free from spatial or temporal limitations.

A consequence of this process has been a re-evaluation of the phonogram in the marketplace and direct benefits to all sectors of the music industry as a result.

However, while digital technology has precipitated a re-evaluation of the phonogram in the markets of the world, it has not, in any significant fashion, improved the general environment for the achievement of legitimate revenues from the production and distribution of phonograms; indeed, it has in some respects exacerbated the problems facing the phonographic industry.

Sales of phonograms around the world have been restricted over the past 25 years by the market distortion caused by piracy and by the phenomenon of private copying. Given the ready availability of professional CD production facilities and domestic digital reproduction equipment, digital technology has by now taken a firm hold in both these problem areas. Losses to the phonographic industry in 1991 from piracy worldwide are estimated at US\$ 1.5 billion; the picture is a depressing one.

At the inception of the CD era, it was widely believed that piracy of phonograms using digital technology would not occur: first, because the patents controlling the systems were owned worldwide by two major corporations, both with important stakes in a legitimate market for phonograms. Secondly, the establishment of the necessary manufacturing facilities was thought to be too expensive as an investment and too sophisticated in operational terms. Not so. From about 1989 onwards, markets throughout the world have been systematically penetrated by quantities of counterfeit or pirate CDs manufactured principally in the Far East or Eastern Europe, usually on second-hand pressing equipment and often in breach of relevant patent restrictions.

For the purposes of this analysis, however, the most troubling statistical proposition for the phonographic industry is to compare its worldwide sales revenue with the income from traditional public performance usage.

Total sales worldwide 1991 : US\$ 25 billion
Total performance income worldwide 1991 : US\$ 125 million

A breakdown of this analysis in the world's principal markets gives even greater cause for concern.

	Sales Revenue 1991 (US\$ million)	Performance Income 1991 (US\$ million)
USA	9793*	-
EC	9842	80
Japan	4236	6

* N.B. Estimated Retail Price based on Published Price to Dealers (PPD) + 25%

A similarly striking contrast in the growth patterns of sales and performance revenue over the past ten years suggests that the phonographic industry now finds itself in a somewhat paradoxical situation. The digital revolution has afforded enormous growth in the retail sector permitting a fundamental re-evaluation of recorded music which in turn has fostered significantly higher levels of investment. This investment translates not only into higher technical and cultural standards but also into heightened material expectations in all sectors of the industry. Now, at a time when the music industry is better organized, better funded and more creative than at almost any time in its history, that same digital revolution threatens to bring substantial changes to the retail distribution market well in advance of comprehensive systems for the phonogram producer to control the distribution of phonograms by means of electronic delivery.

B. Electronic delivery

One of the recurrent problems faced by the recording industry in its struggle against piracy around the world has been the need to explain, often to highly qualified lawyers, that copyright protection in phonograms extends not to a physical object but to the aggregate of the sounds fixed and carried in a particular medium. A similar consideration is equally important to this analysis of electronic delivery because it helps to illustrate why the notion that the existing market for phonogram carriers could be replaced by alternative, non-physical, means of delivery is not so unthinkable. It also has a bearing on the copyright responses which will (as explained below) need to link less with existing performance right concepts and have more in common with provisions relating to reproduction and distribution rights.

The term "electronic delivery" is used here principally to contrast with the traditional process of distributing phonograms via the manufacture and sale of phonogram carriers--tapes and discs. More particularly, reference to electronic delivery contemplates the field of digital transmission systems which, it is widely predicted, will come to have increasing importance in the lives of members of society, both in the workplace and at home.

Many of the technical aspects of the new transmission systems are already well established. Satellite and cable networks have been a reality for many years; both have been undergoing major technical changes of late, with, in the case of satellite reception dishes, major advances virtually eliminating the distinction between communication (FSS) and broadcasting (DTH) satellites. Terrestrial wireless digital broadcasting, otherwise known as digital audio broadcasting or DAB, is likely to become a reality in many parts of the world within the next five to ten years. The third, and perhaps most fundamental development is the prospect of the combination of telecommunications and entertainment services in broadband digital cable networks becoming increasingly prevalent in the developed world by the end of this century.

The future availability of ever more comprehensive digital transmission systems should not mask the capacity of existing cable systems. Take, for example, a partially interactive cable television service available to subscribers in London--a relatively underdeveloped cable environment. It offers in addition to multi-channel terrestrial and satellite television the following:

- 1) **Video games:** the service allows the subscriber to select a video game from a menu. The software is then downloaded from the headend to the set top converter and the subscriber may then play.
- 2) **Electronic mail:** the service allows subscribers to communicate with one another through electronic mail.
- 3) **Database access:** the subscriber can access a number of news databases.
- 4) **Multimedia audio/visual catalogues:** this service is effectively classified advertising with voice and pictures. For instance, subscribers can access a catalogue of houses and cars for sale.
- 5) **Home banking:** subscribers can use the service to access their bank accounts and organize payments and transfers.
- 6) **TVI--interactive television:** the service can allow the subscriber the option to modify the course of television programmes or the coverage of live sports events. During the 1992 Barcelona Olympics the subscribers were offered the capability of selecting their preferred camera angle at any time in a number of events.

These services, while useful to the subscriber, in no way indicate the full potential of cable, particularly as technology advances. The convergence of television, telecommunications and computer technology will be the feature of advances made in the 1990s. This convergence of technologies will lead to an increasing demand for a high capacity data transmission infrastructure, capable of delivering a wide range of data--be it video, audio or textual--to homes and businesses alike. By the end of the century, broadband Integrated Services Digital Network (ISDN) will be very much a reality in many parts of the world.

Existing cable television networks are, for the most part, constructed with high capacity coaxial cable which is very efficient at transmitting large amounts of data over short distances. By way of comparison coaxial cable has a potential capacity of 1 billion hertz (1 gigahertz) compared with a capacity of 4,000 hertz (4 kilohertz) for twisted copper pair telephone wires. In other words, a standard broadband cable network has 250,000 times the capacity of a standard telephone wire. It is this sheer capacity which allows broadband cable to transmit a large amount of data--be it video pictures, audio data or computer data.

The potential for technological advance centers around the prospects for increasing the capacity of cable, thereby expanding the number of channels offered to viewers. There are currently two technological factors influencing the potential capacity of cable:

- Fibre optic cable;
- digital compression.

Fibre optic cable leads to a significant reduction in the degree of signal loss. Optical fibre can carry a signal for twenty miles without amplification; reducing the need for amplifiers reduces the incidence of noise and distortion. As a result, the channel capacity of the system is significantly enhanced.

In the USA, Time Warner is testing a system in Queens which utilizes optical fibre from the headend to clusters of 200-500 homes. This configuration has meant the system can utilize the full 150 TV channel capacity of the coaxial cable running into the home. Consequently, the system is capable of providing 96 channels of regular programming and 54 channels of Pay per View (PPV). Essentially, the PPV channels carry recent hit movies with 4 channels carrying the same movie with staggered starting times every half an hour. The subscriber does not have to wait an hour and 40 minutes if he or she arrives 20 minutes late to tune in.

Digital compression provides scope for an even more dramatic expansion in the number of channels available for use. In the field of video data transmission current progress with digital compression technology suggests that it may be possible to compress 6 to 8 channels into 1 channel's bandwidth.

A vital consequence of this enormous capacity, particularly in relation to the far lower requirements of audio data transmission, is the ability of cable operators to release sufficient channel space to render the service entirely interactive. This combination of two-way communication and digital compression opens up a whole new market for cable operators: audio and video on demand. And for the consumer, transmission of the phonogram with identical quality to the original fixation in the recording studio.

Again, it must be stressed that while the technology is still very much advancing, the functions described above are already a reality. At present, Tele-Communications Inc. (TCI), the largest US cable operator, is test marketing the concept of video on demand in Denver. Its test is called "Take One" and allows consumers to choose a selection from a library of 1,000 film titles and have it played almost instantaneously. Likewise Time Warner, the second largest cable operator has also announced plans to commence experiments with a similar system--called the "Electronic Superhighway" in Florida by early 1994.

Of particular relevance to the music industry's concerns are the digital cable audio services currently operating in the USA, at least one of which is proposing to launch in Europe.

The configuration is relatively straightforward for the consumer who, upon payment of a monthly subscription of around US\$ 10.00, has access through his existing domestic television cable link to upwards of 30 channels of digital audio transmissions of original commercial sound recordings, divided by channel into different categories of music: jazz, classic: symphonic, classic: chamber, heavy metal, etc. The recordings are transmitted without interruption from disc jockeys, news or weather reports and are running on a 24-hour basis in the categories advertised. A decoder in the home links the cable feed with the subscriber's existing hi-fi system, the end result being a running supply of CD quality music combining the best of commercially available phonograms.

It is worth pausing here to examine the current capability of this system. Assume it offers its subscribers 32 channels of digital recordings, each channel running for 24 hours a day. Assume in addition an average running time for one entire CD programme of one hour. This guarantees the consumer access during the course of one day to the equivalent of up to 768 CD programmes--way beyond the average existing domestic CD library. Consider further that a major international recording company's catalogue may hold at any one time up to 10,000 CD programmes; every one of these could be transmitted by one cable operator in under two weeks. The entire worldwide inventory of phonograms currently available on CD could be thus delivered by one cable operator in well under six months.

An important element of the particular cable digital audio system currently attempting to penetrate the European cable market is that it is fed from a satellite link from a base in Atlanta, Georgia. In initial negotiations with the recording industry in Europe, representatives of this particular system were asked what arrangements had been made with record producers for the supply of material to feed the European systems. "None whatever" came the reply, "there is no requirement under relevant US laws to obtain authorization from the producers for the uplink of their sound recordings; the material is taken from CDs purchased in Tower Records."

Again, this particular system will, within the next year or so, become available direct to non-cabled households, on a subscription basis via the Astra satellite which supplies a considerable quantity of television programming in Europe. In this way it will join other existing satellite radio services which are poised to make increasing use of digital audio capacity on satellite transponders currently used for television transmissions.

The major distinction between the capabilities of cable and wireless diffusion systems in the field of digital audio is the interactive capacity of the former. That is not a reason, however, to discount the potential of satellite and DAB as systems of electronic delivery.

The phenomenon of Digital Audio Broadcasting was usefully described in a recent announcement by the UK government as follows:

"Digital Audio Broadcasting (DAB) is a new transmission technique for sound broadcasting. It offers the prospect of CD-quality stereo sound, improved reception in car radios and portable receivers, a greater number of services within the same amount of radio spectrum and additional features and types of services.

"DAB has been developed in a project under the EUREKA umbrella, the European industry-led collaborative RED programme. The consortium is made up of broadcasters, consumer electronics manufacturers, research institutes and universities and includes the BBC, Philips, Grundig and Thomson. The project has produced a preliminary specification for DAB which has gone before the European Telecommunications Standards Institute (ETSI) for standardization.

"DAB employs two novel techniques for delivering high-quality sound, even to portable or car receivers: a means of bit-rate reduction which allows a high quality audio signal to be transmitted using about one-sixth the bit rate of a compact disc; and a transmission system called COFDM (Coded Orthogonal Frequency Division Multiplex) which overcomes the problem of interference by spreading the signal over hundreds of carriers rather than just one.

"The first commercial terrestrial DAB broadcasts are expected in 1995. It has been generally agreed that the 87.5-108 MHz frequency band (Band II) will be the eventual home of DAB, replacing the existing and planned FM sound broadcasting transmissions. However, as with all new broadcasting systems, a transition period of the order of 15 to 25 years can be expected before it is possible to switch off the old services which are being replaced. Until there is sufficient market penetration of DAB receivers to allow the withdrawal of FM services from Band II, DAB transmissions will occupy a temporary "parking band", yet to be decided."

Note the repeated references to CD quality: such quality is not necessary for weather or traffic reports.

As stated earlier, it is important to regard the situation as one very much governed by a developing technology, aiming to increase capacity (to the consumer: choice) and quality of transmission. It is, as stated, difficult to predict consumer practices in response to the various systems with any certainty; likewise it is difficult to develop any notion of how the different services offered via satellite, cable and DAB will interact or, indeed, compete with each other. With a multitude of electronically delivered music sources available, will the consumer ultimately require an interactive system? Will interactive capability and the convergence of telecommunications and entertainments services be the determinant factors, leading to the decline of wireless systems in a static domestic environment? Even were this latter scenario to come about, one can already predict a growing demand for satellite and terrestrial digital transmission services in a mobile environment, particularly for in-car information and entertainment.

One proposition can, however, be safely advanced at this stage: it would be contrary to all logical expectation if, in the mid to longer term, electronic delivery did not substantially replace the existing retail systems for marketing phonograms.

Part II: Electronic delivery and copyright: the response

Before examining the regime of copyright required to enable the music industry to function in the electronic delivery market, it is worth examining a number of technical systems which have been developed in response to the digital revolution--and, in particular, in anticipation of the advent of electronic delivery.

A. Technical systems

Digital recordings as embodied in CDs or other digital carriers (DAT, DCC, MD) contain a great deal more information than merely the data incorporating the music programme. Information is required to guarantee the correct response of the playback system; in the most recent digital carriers--Digital Compact Cassette (DCC) and MiniDisc (MD)--information is carried to identify song titles and performers for the benefit of users. This information is carried in what is known as the subcode to the recording and capacity there exists which can be used to protect the interest of rightsowners in the recorded music programme.

SCMS

The first application of this subcode capacity in the copyright field was adopted in relation to the problem of serial digital copying, and developed through cooperation between the hardware and audio software industries. This came about after extensive discussions in Athens in 1989 which led to broad agreement on legislation and standards proposals on electronic circuitry to limit the copying capability of domestic digital reproduction equipment, commonly referred to as the Serial Copying Management System (SCMS). Prior to this, the development of non-professional Digital Audio Tape (DAT) recorders caused the music industry particular concern on three grounds:

First, as the DAT standard adopted involved the use of video recorder technology, the prospect of DAT becoming a cost effective prerecorded format for audio was extremely limited. Secondly, with second generation domestic DAT recorders facilitating direct digital transmission of data at the same sampling frequency (44.1 kHz) from CD players to DAT recorders, the primary function of the new medium looked likely to dramatically increase the already grave problems of private copying.

Third--and most importantly--the digital reproduction system of DAT equipment meant that there would be virtually no measurable drop in quality from one generation of copy to the next, increasing the dangers from private copying exponentially. Indeed, this last phenomenon, serial digital copying, transformed the problem of private copying into one of private cloning.

The SCMS system in essence reads and writes in the space provided in the subcode of a digital recording information determining whether or not a further generation of copies can be made from that source. It is a highly complex system which does not warrant detailed description here. Suffice to say that so far it has proved effective as a response to serial digital copying. What must be fully understood, however, is that it does not, and was never intended to, address the problems of the first generation private copy.

ISRC

A second use of the subcode capacity is for inclusion of the International Standard Recording Code (ISRC). ISRC has been developed over the past few years under the auspices of the International Standards Organization and is now administered by IFPI through its approved national agencies. It functions to provide each individual recording with a unique international identification code; it includes information as to the original producer and the country of origin. The system is already in general use in certain territories--for example, in Japan--and in time will provide the music industry with an extremely efficient method for automatically identifying and quantifying the usage of particular recordings in an electronic delivery environment. Clearly, the advent of the digital transmission systems discussed herein was very much taken into account in the development of the system. Furthermore, with correctly cross-referenced data bases to interpret the ISRC number, all sectors of the music industry will benefit from accurate returns on usage in all electronic delivery systems.

SCMS or ISRC provide only a part of the response to the problems posed to the music industry by electronic delivery. They are simply tools, the function of which should be, as in the case of copyright provisions, to establish the appropriate balance between the interests of the producer and the user. That balance has to be constantly readjusted in response to technological advances: serial digital copying (cloning) disturbed the balance too far in favour of the user; to have outlawed domestic digital recording equipment entirely would have represented an over-correction denying public access not only to the copyright material in question, but to the systems carrying that material, systems which could have many other uses as well.

Clearly, having developed part of the response to electronic delivery, the music industry is entitled to expect that all those engaged in digital transmission should ensure its diffusions of phonograms via satellite, DAB or cable will include diffusion of the corresponding SCMS and ISRC information. From a technical point of view, that association in the diffusion is not automatic; on a legal or regulatory basis, it should be made so.

Indeed, the use of the ISRC numbering in the electronic delivery market, particularly in an interactive cable environment, may well prove to be the key to the efficient functioning of the system from all points of view: from the producer's, from the cable operator's and from the public's.

B. Copyright proposals

It should be apparent from the technological developments discussed above that innovative legal solutions are required to enable the music industry to function in the electronic delivery market. In discussing possible solutions there are two overriding considerations: first, as noted above, the impossibility of predicting in advance precisely what form the applications of the new technology in practice will take; and hence the impossibility of designing legislation which will specifically apply to each practical situation. The other consideration is the speed with which this technology is being developed and applied. These two considerations lead inexorably to the conclusion that legislation must be framed now, in general terms, which will

enable rightsowners to protect their interests as and when new applications of the technology appear. This in turn means that, in the music industry, phonogram producers must have exclusive rights of control over all forms of storage and transmission of digital audio data, irrespective of the means by which these activities are carried out.

There is no existing regime in respect of communication to the public to secure the phonogram producers' interests and responsibilities in the case of electronic delivery. The conclusion to which this leads is that there is a need for a general diffusion right, the definition of which, and its relationship to other rights, will need careful study. However, before proceeding to consideration of this proposition, it is necessary to examine on a preliminary basis the legal measures created in response to private copying, if only because these are regularly referred to by broadcasting interests as the panacea for the music industry's concerns about the consequences of introducing electronic delivery systems.

Private copying legislation

There is no international law on this subject, nor any prospect of any, at the present time; this goes some way to explaining (and is also, perhaps, explained by) the varied legislative provisions which have been adopted at the national level and also reflects the limited structure and function of these measures. They vary from digital only provisions (USA and Japan) to analogue and digital measures elsewhere; they involve in some cases varying levels of unallocated general payments; some are limited to royalty payments on blank media, some to both media and recording equipment; there is no common position as to the appropriate division of proceeds between beneficiaries.

The justification and need for these systems is long established and it is neither necessary nor appropriate to discuss them in detail here. It is worth remarking, however, that the heterogeneous nature of the measures indicates the influence of political compromise on the legal solutions established, albeit in response to a clear but unquantifiable use of copyright material. This remark is justified in the present context to underline the point that the provisions introduced to date were never envisaged as providing any solution to the music industry's requirements in relation to electronic delivery as discussed herein. This is confirmed by the fact that royalty levels introduced around the world as part of these measures are entirely remote from appropriate primary remuneration levels and by the fact that in many cases the benefits of the system are extended internationally on a de facto or de jure reciprocal basis. It must be clear from this that there is no place for the same kind of compromise in establishing the new legal framework for the electronic delivery of copyright material.

Again, reverting to a theme which runs through this paper, while private copying of electronically delivered phonograms is likely to rise dramatically in the short term, it is entirely possible in the mid to longer term that the choice of material available from digital cable or wireless systems may dispense with the need for copying at all. It is important therefore to ensure that in devising the appropriate legal regime for electronic delivery, the existing provisions on private copying are totally disregarded from a structural point of view and not permitted to detract from the search for measures to facilitate control over a primary use of phonograms.

Digital diffusion: an exclusive right

In its submissions to WIPO and national governments in relation to the work on a new international instrument on the rights of producers and performers in sound recordings, IFPI has called for the introduction of an exclusive right to authorize or prohibit the digital diffusion of phonograms. Digital diffusion is defined in those submissions as follows:

"Digital diffusion" means any transmission of sounds by the use of digital signals for reception by a member of the public.

This is distinguished from traditional analogue broadcasting techniques which are defined as follows:

"Broadcasting" means any transmission of sounds by wireless means for reception by a member of the public,

which definition is, of course, very much in line with Article 3, paragraph (f) of the Rome Convention.

Two elements therefore distinguish the digital diffusion right: first, it applies equally to wireless or cable transmission systems; secondly, it applies strictly to the transmission of sounds by the use of digital signals.

It would of course be premature to predict the adoption of the provision in precisely this form, but the intent behind its proposal is evident. The various systems of electronic delivery discussed above have many factors in common and in particular the facility to transmit to the consumers the sounds constituting a phonogram in identical manner to their original fixation in a recording studio. Combined, they have the potential to supply the consumer with all his requirements in terms of recorded musical performances, whether in a static or mobile reception environment.

It will of course be argued in a number of sectors that the "digital diffusion right" as proposed by the phonographic industry is, at best, only artificially distinguishable from a broadcasting right as defined in the Rome Convention. Perhaps so in its current formulation; certainly not in its intent and scope.

Consider the simple description of the broadcasting right by Stewart under the heading "Secondary uses of phonograms--Article 12."¹

"The expression "secondary use" is not used in the Convention, but it is used in the chapter heading of the Report to make the point that the primary use of a phonogram is in the home, that is a private use with an audience of a few people, whereas the use of a phonogram in public places with an audience of hundreds or thousands or on the air with an audience of millions, is not the use for which it was primarily intended. It is a "secondary use". Therefore, in accordance with the general principle of copyright it involves a performance right and therefore remuneration. The "secondary uses" regulated in Article 12 are the use of phonograms in broadcasting and communication to the public."

¹ Stewart, International Copyright and Neighbouring Rights, 2nd edition, London, 1989, p. 238.

Over 30 years on, this "secondary use" approach to the broadcasting of phonograms is still being perpetuated at the international level. The European Communities' Council Directive 92/100/EEC of 19th November 1992 on rental right and lending right and on certain rights related to copyright in the field of intellectual property provides in its preamble the following:

"Whereas the adequate protection of copyright works and subject matter of related rights protection by rental and lending rights as well as the protection of the subject matter of related rights protection by the fixation right, reproduction right, distribution right, right to broadcast and communication to the public can accordingly be considered as being of fundamental importance for the Community's economic and cultural development ...

"Whereas copyright and related rights protection must adapt to new economic developments such as new forms of exploitation ..."

The Directive then provides in Article 8(2) the following:

"Member States shall provide a right in order to ensure that a single equitable remuneration is paid by the user, if a phonogram published for commercial purposes, or a reproduction of such phonogram, is used for broadcasting by wireless means or for any communication to the public, and to ensure that this remuneration is shared between the relevant performers and phonogram producers. Member States may, in the absence of agreement between the performers and phonogram producers, lay down the conditions as to the sharing of this remuneration between them."

The position at the national level is equally alarming. Ringer and Sandison (in Stewart, *ibid*) describe the situation in the USA as follows:

"The triumph represented by the statutory recognition of sound recordings as copyrightable works is a qualified one. Section 106 (of the 1976 Act) excludes sound recordings from the categories of works accorded exclusive rights of public performance, and Section 114 states explicitly that the exclusive rights of the owner of copyright in a sound recording do not include any right of performance under Section 106(4). Radio broadcasts and discotheques, among others, are thus left free to perform copyrighted records publicly, as long as they have licences from the owners of copyright in the musical composition performed on the records. This obvious inequity did not go unnoticed, and the 1976 Act left the legislative door open for further consideration of performing rights in records. However, despite a favourable report from the Register of Copyrights and additional hearings on bills aimed at establishing a compulsory licence with modest royalties for commercial performance of records, the chances for legislation in the near future appear slim. The opposition from the US broadcasting industry is too strong."

The phonographic industry should perhaps be relieved that the chances for legislation providing a performance right coupled with "a compulsory licence with modest royalties" are slim. What is needed is the exclusive right to authorize or prohibit the use of phonograms in all forms of electronic delivery.

Even in the UK, where phonogram producers have enjoyed exclusive broadcasting and public performance rights since the early 1930s, the position is now somewhat unclear. The combined effect of the Broadcasting Act 1990 and the Copyright Designs and Patents Act 1988 appears to provide that where the performance rights in a phonogram are collectively administered, broadcasters have the possibility of taking a statutory licence, at a level to be determined by agreement or, failing that, by the Copyright Tribunal. The digital cable audio operator referred to in the first part of this paper has announced its intention to do precisely that.

Clearly the question of performance rights needs urgent re-examination in response to the new transmission technology both at the international and national levels. The proposition that broadcasting and other communication to the public represent merely "secondary" uses of phonograms, if it was ever valid--which is doubtful--is now completely outmoded.

As described in the first part of this paper, the modern phonographic industry is a highly creative and complex enterprise, involving production, marketing and distribution systems serving a global market. Its investment decisions are taken first, upon its contractual relations with performers and secondly upon its ability to organize the manufacture and distribution of carriers for its phonograms on a worldwide basis. The latter process depends almost entirely on the correct national application of reproduction and distribution rights as elements of copyright legislation.

The exclusive right to authorize or prohibit the reproduction of a phonogram is therefore fundamental to the functioning of the industry, which fact is now generally recognized worldwide. It must also be noted in this era of constant technological advance that this progress has greatly extended the commercial life of a phonogram giving rise to the need for a term of protection of at least 50 years from the date of first publication. Furthermore, the very concept of the reproduction right is worthy of re-examination against the background of the technical possibilities of digitally encoding, storing and transmitting recorded sound.

A growing number of national laws recognize an exclusive right of distribution, or measures related thereto, such as exclusive rental and importation rights. These rights have developed in recognition of the global market for cultural materials (importation) and in response to incidental commercial enterprises made possible by new technology (rental).

Rental of phonograms first surfaced as a commercial threat, in Japan, in 1980. It spread rapidly as an enterprise and in the space of a few years severely prejudiced the normal exploitation of phonograms through retail outlets. Recognizing this unfortunate development as counterproductive to the future of the phonographic industry, a number of countries--e.g., USA, France, UK--hurriedly introduced the necessary legislation enabling producers to control the commercial uses to which copies of their phonograms were put, notwithstanding the exhaustion of the reproduction right therein and the placing of the copies on the market. Japan has now extended similar provisions, on a limited basis, and the EC Directive referred to above includes a specific right to control rental in favour of authors, performers and producers.

The right to control importation is an increasingly important complement to the producer's exclusive reproduction right in order to operate in a global market. While production and manufacturing operations become increasingly centralized (to achieve greater efficiency), economic conditions and legislation vary enormously in the diverse markets which the phonographic industry services around the world. Currency fluctuations exacerbate these differences even in the more developed markets and some mechanism must therefore be instituted to enable rightsowners to operate in markets undistorted by freeloading competitors. This can be done by providing in national copyright laws that, as an element of the copyright created thereunder, the owner (or his exclusive licensee) is entitled to authorize or prohibit the importation of copies of a phonogram so protected regardless of whether they were lawfully manufactured or not. An increasing number of countries are realizing that the absence of such a provision subjects the laws in the country of importation to the lowest common international denominator in terms of protection. Accordingly, an exclusive importation right guarantees the territorial and thereby the functional security of the other rights extended to the copyright owner.

The principles embodied in the exclusive rights of reproduction and distribution are equally relevant to the electronic delivery market. Here, the producers will need the appropriate mechanisms to:

- i. establish price structures for the phonogram;
- ii. control the ways in which individual phonograms are released into the market--for example, by restricting the content and rotation of programming within the service to ensure a balanced exposure of a wide range of material;
- iii. correct distortion of the market from unauthorized diffusion;
- iv. coordinate releases of phonograms between different markets around the world.

Clearly, these objectives fall well beyond the scope of existing provisions on broadcasting and communication to the public and it is clear that the digital diffusion right will have to function in relation to electronic delivery in the same manner as do exclusive reproduction and distribution rights in relation to the retail market.

Where performance rights exist in phonograms, they are normally administered on a collective basis. It is not possible to discuss the question of collective administration here, except to note the need for considerable ingenuity in adapting its functions to the electronic delivery market where general competition laws will be as relevant as they are in the retail market.

A more immediate question, particularly as work progresses on the WIPO initiatives on a Possible Protocol to the Berne Convention and the New International Instrument is to consider once again the interrelationship of the exercise of rights extended to the different sectors of the music industry.

At the first session of the Committee of Experts on a Possible Protocol to the Berne Convention in November 1991, the theory was advanced that the exercise of the producers' rights must be subjugated to the exercise of the author's rights. This, it was argued, is the meaning of the Article 1 of the Rome Convention ("the safeguard clause"). It is submitted, with respect, that these propositions are ill-founded and incorrect. They can be overturned on two grounds. The first ground is historical.

The initial version of the safeguard clause which was the object of the discussions at the Rome Conference was Article 2 of the Hague draft. The text read as follows:

"The protection granted under this Convention shall leave intact and shall in no way affect the protection of rights of authors of literary and artistic works or of other copyright proprietors. Consequently, no provision of this Convention may be interpreted as prejudicing such rights."

According to the report of the Rapporteur-General, the aim of this provision was to establish that the Convention would have no effect upon the legal situation of copyright proprietors. The different participants at the meeting disagreed as to the import of this provision. Some delegations considered the provision superfluous while others stressed its importance. The French and Italian delegations, in order to make sure that the exercise of rights be included in its scope, presented a proposal to amend the provision as follows:

"The protection granted under this Convention shall leave intact and shall in no way affect the right of the author and the exercise of that right over the work interpreted, performed, recorded or broadcast. No provision of this Convention may be interpreted as prejudicing that right."

The amendment was supported by Mexico, Tunisia, Spain and Yugoslavia. It was rejected by the delegations of the Federal Republic of Germany, the United Kingdom, Austria, the Netherlands and the United States. The German delegation considered the amendment dangerous as it might have given rise to the idea that only the author's consent was necessary in cases where the producer's or performer's rights were also involved, i.e., for the reproduction of a phonogram or the broadcasting of a performed work.

According to the Dutch delegation, in speaking of the "exercise of rights", the amendment exceeded the scope of the original text. The aim of Article 1 was to guarantee the existence of copyright. The wording proposed by the French and Italian delegations could have given rise to the conclusion that as soon as the author had given his consent, the artist was deprived of the possibility of refusing his own authorization. Such consequence was considered as depriving the performer or producer of his rights as granted under the Rome Convention.

In view of the possibility of endangering the protection granted by the Rome Convention, the Franco-Italian proposal, when put to vote, was rejected and the Hague text, modified mainly on a Swiss proposal, became Article 1 of the Convention as it currently stands.

It is therefore clear from the discussions and the adopted version of the safeguard clause in Article 1 of the Rome Convention, that this provision does not concern the exercise of rights.

The second ground is one of practicality which in turn suggests that if a hierarchy exists in the exercise of exclusive rights it is organized to facilitate exploitation of a work by the producer. The WIPO Guide to the Rome Convention explains the situation in this way:

"This Article 1 is limited to safeguarding copyright. It does not proclaim its superiority by laying down that neighbouring rights may never be stronger in content or scope than those enjoyed by authors. Indeed there are a number of examples showing that neighbouring rights are not necessarily inferior. The Rome Convention gives record makers and broadcasting organizations the right to forbid the reproduction of phonograms and the rebroadcasting of their broadcasts respectively. The Berne Convention is less firm: copyright in the cases in point may be the subject of compulsory licences."

At the meeting of the Governing Bodies of WIPO in Geneva in September 1992, it was decided by the Assembly that one of the issues to be discussed by the Committee of Experts on a Possible Protocol to the Berne Convention would be the question of non-voluntary licences for the sound recording of musical works. In the present context the following passages from the meeting report (B/A/XIII/2) are relevant:

"... The Delegation (of Mexico) stressed that during the preparatory work on the Possible Protocol to the Berne Convention, the priority of rights of authors vis-à-vis the beneficiaries of neighbouring rights should be preserved.

"12. The Delegation of Hungary also advocated the maintenance of a balance between the interests of authors and those of the beneficiaries of neighbouring rights and said that the principle laid down in Article 1 of the Rome Convention should serve as the basis for the preservation of the said balance in any new instrument on neighbouring rights."

It is submitted that proposals to establish a priority for authors' rights in a possible Protocol to the Berne Convention as a kind of defence mechanism to improved protection for producers and performers are inappropriate. What is required, clearly, is a full examination of the interrelationship between the various sets of exclusive rights necessary to enable the music industry, in all its dimensions, to function in the electronic delivery market. As explained, Article 1 of Rome is neutral in this respect; likewise, any examination of Article 13.1 of the Berne Convention, undertaken in advance of work on improved protection on the rights of producers and performers would be likely to prove incomplete and therefore counterproductive to the achievement of the necessary regime.

Conclusion

City of London stockbrokers Hoare Govett, in their recent World Music Industry Report (subtitled "Let the Good Times Roll"), present a picture of continued health for the music industry based on continuing growth of the existing retail structures:

"We are not predicting any "revolution" in the music business over the next few years. However, we feel that the longer term merits of what remains a global growth business have become obscured by a flurry of concerns specific to individual markets that have little bearing on the global picture. Having examined a number of such issues in some depth we remain convinced that the "good times" which the industry has enjoyed for the last six years will extend into 1993 and beyond as continued CD growth and recovery in markets such as the US and the UK more than offsets deteriorating (but much smaller) Continental markets."

This positive prognosis contrasts markedly with a headline in the Financial Times of 27th February 1993:

"Digital Killed the Audio Star"

The article reviews many of the systems discussed in the first part of this paper and likewise attempts to assess their possible impact on the fortunes of the music industry. Quoted in the article is a statement by Mr. Alain Levy, Chief Executive of Polygram, one of the world's leading recording companies: "The technology will exist, but my gut feeling is that changes in people's behaviour take a lot longer."

That is probably the most accurate proposition possible at this point in time on the question of consumer practices. From a legal point of view, however, it is important to remember that laws usually change more slowly than people's behaviour and that in the case of electronic delivery, such a delay could prove fatal to the music industry as presently constituted.

The current inadequacy of provisions worldwide on performance rights in sound recordings give a measure of the task to be accomplished. The proliferation of record rental in Japan and other examples of the damage caused by the failure of copyright law to stay abreast of technology confirm the need for caution--and for the advancement of the necessarily complex studies to produce a workable and equitable legal framework for the music industry in the age of electronic delivery.

**DIGITAL TECHNOLOGY:
A CRITICAL CROSSROAD IN INTERNATIONAL COPYRIGHT**

by

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I. Introduction

We are at a critical crossroads in international copyright. New technology, accompanied by a dazzling display of new machines and devices is forcing a re-examination of the rules and public policy bases upon which intellectual property laws are applied. The key technological term for the future is "digital." Unlike analog technologies, such as reprography and videotape recordings, digital technology has the capability to provide a low cost means for virtual distortion-free copying and advanced manipulation of the material it processes.

At the same time as technology is forcing a re-examination of traditional copyright norms, economic protectionism is rearing its ugly head in those countries where imports of copyrighted works are far exceeding exports. This new wave of protectionism has resulted in the abandonment of the bedrock international copyright principle of national treatment. In its place, states have adopted reciprocity, new concepts of formalities such as "first fixation," and "quotas" to restrict importation of foreign works. These trends are dangerous and alarming. National treatment must be preserved as the guiding principle of international copyright. Formalities and quotas should be abandoned. Otherwise creation will be stifled, investment will be jeopardized, and all the cultural industries, domestic and foreign, will suffer.

The World Intellectual Property Organization (WIPO) and others have commenced a policy debate on the issues that digital technology raises for international copyright. WIPO is to be commended for its leadership role and for its attempt to resolve these critical issues in the context of a new Protocol to the Berne Convention and possible new international instrument. In responding to WIPO's well intentioned initiatives, let me review several of the questions that I believe are the most important raised by digital technology and then turn to an analysis of their implication for the international copyright conventions.

II. Some legal questions posed by digital technology

The ability of digital technology quickly and inexpensively to create digital versions of works originally produced in the analog domain, such as sound recordings, motion pictures and text, and to make an infinite number of low cost and distortion-free copies of those works, suggests several questions.

First, is there a general need for recognition of new rights for the owners of existing works--rights that relate to the creation of digital copies of the works?

Evidence gathered from lawyers and others negotiating transactions in this area seems to indicate that in practice the owners of rights in works that might be converted into digital format and the persons using such works recognize that the right to transform a work from the analog domain into the digital domain is not equivalent to a "fair use" or the right to make a private copy. Under the Berne Convention and United States law, the exclusive right to control reproduction of a work is sufficient to protect against the creation of a digital version of a work. Under the EC Directive on the protection of computer programs, it also seems clear that "loading, viewing, running, transmission or storage" of digital works are restricted acts. It therefore is unlikely that any specific "new" rights need to be recognized, but those concerned with copyright and neighboring rights need to consider these issues in the negotiation of agreements.

Second, should there be different legal structures regulating the rights of analog copies as opposed to digital copies?

This question reflects the fact that virtually perfect copies can be made and, therefore, are more likely in the digital domain. Take, for example, the compact disc version of a sound recording. Unlike analog recordings, which suffer from noise and a sharp decrease in quality over successive generations of copies, the digital version of the sound recording on a CD can be copied onto a digital recorder or onto computer media with no loss in fidelity whatsoever. The near perfect quality of the copies presents two problems. First, unless rentals of sound recordings are prohibited, it is cheaper to rent a digital recording and make a copy rather than to buy one. In countries like Japan where rentals of compact discs are permitted, it is estimated that more than ninety per cent (90%) of those renting CD's make a copy, resulting in millions of dollars in lost sales in Japan alone. The new EC rental directive and proposed rental prohibition provision in the GATT agreement would sharply limit and hopefully curb this practice. Indeed, since the new limitation on rentals was adopted in Japan, I can report that sales of CD's alone in the first six months of 1992 increased significantly over the comparable period in 1991.

The second problem is making copies from CD's that are purchased. Under the proposed EC private copying directive and the new U.S. audio levy, unlimited first generation copies can be made from sound recordings purchased in the store or taped from broadcasting transmissions or cable TV. Both the U.S. law and EC draft directive contain a provision barring second generation copies, that is, a device must be included in the digital machines which prevents copying the copies. By permitting unlimited first generation copies, however, the policy approach is to protect authors only by imposing a royalty on blank tapes and machines.

It would appear that the notion of royalties on tape and machines as an adequate solution to the problems of private copying should be reexamined. In audio, it will not prevent unlimited first generation copies of near perfect quality to be made from copies purchased. Royalties collected by the European societies from the sale of copies will inevitably diminish. While blank tape revenues will increase, revenues from mechanical reproduction will decrease. The BIEM agreement may become irrelevant as record companies sell fewer copies in light of increased off-air taping and unlimited freedom to make first generation copies. In effect, substantially lower involuntary blank tape and hardware royalties will be substituted for higher copyright authorized royalties.

In video, the results will be even more alarming. Rentals of videocassettes are a multibillion dollar business worldwide. Unlike audio, it is anticipated that under the EC rental directive copyright owners will "authorize" video rentals rather than "prohibit" them. But the business of videocassettes is as much a sell-thru business today as a rental business. Revenues to suppliers from worldwide sales and rentals of videocassettes in 1991 totalled approximately 6.8 billion dollars. Sales of videocassettes represented more than 50% of this amount, confirming a trend that now makes revenues from sell-thru copies greater than revenues from rentals. The continued improvement of videocassette sales compared with rentals suggests that, like audio, some prohibition against copying rental videocassettes must be found if the sales of videocassettes are to prosper and thrive. Otherwise, as in Japan, sales of videocassettes will not improve but will decline as consumers rent copies and make their own digital versions. New hardware will facilitate such copying of rental cassettes. Thus, there is a need for a comprehensive review of the direction legal structures are taking to determine whether some alternative to the proposed private copying regimes is warranted.

Third, should the rights associated with broadcasting be different in a digital broadcasting world, where the recipient of the broadcast signal will have the ability to make any number of distortion-free copies of the material received over the air?

Cable television and satellite broadcasting have changed the face of communications in the U.S. and Europe. These new systems permit signals to be transmitted freely from one country to another and offer films, music videos and sound recordings to their viewers through off-air, pay-TV, pay-per-view and pay-per-listen services. Under all of these services entire films and sound recording albums can be received in the home, by consumers, virtually on demand. Once received, unlimited copies can be made and, with digital technology, the prospect for copyright owners is frightening. Nonvoluntary licenses which permit unlimited copying from such specialized services as Home Box Office, Canal Plus, pay-per-view or pay-per-listen services do not appear to be an adequate response. If entire sound recording albums can be heard by pushing a few buttons on a cable TV system and copied with impunity as the album is performed, then real sales will be lost and copyright owners will be significantly damaged. We should rethink the adequacy of blank tape levies for digital recordings of cable television and satellite broadcast transmissions. If technology can offer the consumer distortion-free copies, it can also offer the copyright owner a system for preventing unauthorized copying of digital transmissions. Copy prevention and tracking systems should be further explored.

Fourth, does the pervasiveness of the technology require cooperation between rights holders and the manufacturers and distributors of equipment that have the capability to create, reproduce or manipulate digital information?

As digital technology develops, the relationship of the content to a particular embodiment is going to become less and less direct. For example, a consumer might receive a broadcast signal of a particular program, store it briefly on some media that may be located away from the home, and then forward the digital information to a friend, who may again view it, store it briefly, and so on. In this context, the traditional relationship between the work and its tangible embodiment is lost. Authors will be unable to "track" all the uses of their work. Further, the nexus between the work and its tangible embodiment, which provided some basis for the concept of awarding royalties based on sales of blank tape, is broken. In order to effect the public policy of providing an economic incentive to authors to produce original works, it may therefore be necessary to require the adoption of some system for the "tracking" of uses that will involve a degree of cooperation between rights holders and the manufacturers and distributors of equipment. In addition, because certain legal doctrines such as the first sale doctrine (which effectively allows the unauthorized renting of video cassette copies of motion pictures), presuppose some difficulty by the user in making single or multiple copies of the work, those doctrines should be reviewed as the practical difficulty in making copies is eliminated.

III. Proposed international solutions

1. EC private copy directive

In the face of the challenges posed by new technology, national and international laws are being revised to accommodate new uses of copyrighted works. In Europe the EC has embarked on an ambitious program to harmonize European copyright laws. While some of the proposals adopted by the EC are laudable, such as the extension of the term of copyright protection and establishment of a rental right in sound recordings and video, others, such as the private copy directive, broadcasting directive and satellite directive, contain provisions that are regrettable.

In the draft private copy directive, the EC has abandoned the bedrock concept of "national treatment" and clearly embraced reciprocity. According to Article 11 of the draft, all remuneration, whether attributable to authors, producers, or performers shares, is subject to reciprocity unless a country outside the EC grants similar protection to the EC under its national law.

On its face, this proposal is inconsistent with the obligations of EC states that are members of the Berne Convention. The argument that private copying regimes are not covered by Berne simply because they protect new rights not specifically included in the Convention does not withstand scrutiny. This is the same argument on which Denmark has recently determined to apply the principle of reciprocity in its new private copying legislation. Under this analysis, however, the Berne Convention is frozen. Any new rights designed to protect authors against new technologies are beyond its scope.

Protection is limited to only those rights specifically mentioned in the text. This result is completely at odds with the text of the Convention which provides that states must grant to authors rights which their "respective laws do now or may hereafter grant to their nationals, as well as the rights specially granted by this Convention."

In his famous "Guide to the Berne Convention", Claude Masouyé makes clear that under Article 5 of the Convention, all authors who are nationals of Berne Countries have a minimum guarantee that they will enjoy all the rights "specially granted by the Convention." In addition, and "over and above" this minimum protection, "they must be treated in all Union countries at least as well as national authors," (pp. 32-33). Thus, the rights granted by the Convention are minima not maxima and "national treatment" applies to all additional or new rights adopted by states parties to the Convention. The draft directive clearly violates this basic precept of the Berne Convention and places those EC states that follow it in violation of their treaty obligations.

In an attempt to cope with this clear violation of international copyright law, the draft directive suggests that member states of the EC may avoid their Berne obligations, if third party states "are seen [not] to respect international conventions," (Article 11, para. 1). In effect, if objective reciprocity is illegal under international copyright conventions, then maybe subjective reciprocity can be substituted in its place. Obviously, subjective reciprocity has no greater claim to validity under the Convention than objective reciprocity.

Strictly applied, subjective reciprocity could even be more damaging to the EC than to the U.S. If the same subjective reciprocity rule were applied by the U.S. to works of EC nationals, then the U.S. could potentially withhold performance, distribution or reproduction rights against any EC works in accordance with the U.S. view that the EC was not respecting the rights accorded to U.S. nationals under Berne. While such potential actions could be a trade negotiator's delight, they are totally inconsistent with international copyright law and with commercial interests of rights owners on both sides of the Atlantic. Reciprocity, whether objective or subjective, must be abandoned.

Further, any doubt as to the viability of reciprocity as a concept in international copyright law was removed by Canada, Mexico and the United States in the recently concluded North American Free Trade Agreement. In the agreement, a strong "national treatment" section was inserted to protect all copyright interests. It provides that "each Party shall accord to the nationals of the other Parties treatment no less favorable than that it accords to its own nationals with regard to the protection, enforcement and exercise of all intellectual property rights." It further provides that the national treatment provisions "shall not be made subject to compliance with any formalities or conditions on the acquisition of rights, in respect of copyright or related rights." Under this latter clause, as under the Berne Convention, formalities or conditions respecting the assertion of rights in copyrighted works are prohibited. Thus, the famous formality of first domestic fixation inserted in the French private copying law--and which now appears again in the draft private copying directive--is simply not valid. Formalities, like reciprocity, are a subterfuge to deny foreign interests a fair share of copyright royalties. They have been rejected under NAFTA and should be rejected by EC member states.

Finally, the application of reciprocity to private copying levies will create certain dangers within the EC itself. If limitations are imposed on the nationals entitled to participate in the royalties paid by the manufacturers of machines and blank tapes, these same manufacturers may question the level of payments being demanded by copyright interests. It does not appear fair for manufacturers to pay tens of millions of dollars to collecting societies who are allegedly protecting authors from the harms incurred by home taping when only a small portion of the world's authors are participating in the distribution of the funds. A legal regime that awards French film producers tens of thousands of dollars for each French or EC film allegedly available for copying, and awards U.S. film producers nothing, creates a disparity which must be recognized in due course and corrected.

2. EC broadcasting and satellite directives

The broadcasting and satellite directives represent further attempts by the EC to harmonize internal legislation and restrict the importation or limit the payment for foreign works. Article 4 of the broadcasting directive adopted in 1989, provides that EC broadcasters "shall ensure where practicable ... that broadcasters reserve for European works ... a majority proportion of their transmission time." The requirement is a mandatory minimum. Thus, member states can require that "European Works" constitute more--but not less--than 50% of a stations broadcasts. The purpose of the directive is to restrict EC broadcasters' demands for popular U.S. works and to inflate their demand for European works.

Certain EC states, notably France, attempt to justify the broadcast quota on cultural identity grounds. But the directive says nothing about cultural identities of European countries and refers only to money and markets. It is a quota imposed on television programs based solely on their country of origin. As such, it raises substantial questions under the GATT and particularly whether it is consistent with the "most favored nation" requirements of the existing and proposed GATT treaties. For copyright, the impact of such restrictive and discriminatory non-tariff trade barriers is obvious. If a copyrighted work cannot be imported into a country because of a restrictive quota, the authors, producers, and performers, entitled to compensation for the use of their works shut out of the market. No station will pay for what it cannot broadcast and no private copying levy will include payment for works which cannot be copied.

The satellite directive also seeks to transform the face of broadcasting in Europe. Coinciding with the emergence of pay-TV and pay-per-view technologies, it encourages broadcasters to send signals across frontiers and to subject payment for reception of such signals in receiving countries to collecting societies.

Such arrangements are not unfamiliar in the U.S. where, under the 1976 Copyright Act, Congress adopted a compulsory license scheme for the retransmission of broadcast signals by cable television systems. The U.S. system has been under review and proposals are pending in the Congress to abolish the compulsory license. No mechanism has been offered, however, to replace the current collective approach to the payment of copyright performance fees by cable operators. Instead, last year the Congress took an apparently inconsistent step by granting broadcasters a retransmission right

in their programs. Thus, at the present time in the U.S., there is a dual system of exclusive retransmission rights for broadcasters and a compulsory license for copyright owners. The U.S. system is obviously flawed and must be corrected. Broadcasters should not have exclusive rights in their transmissions while copyright owners have non-exclusive rights in the programs subject to those transmissions. It would be a mistake, however, if the U.S. did not benefit from the European model and recognize the need to establish a mechanism for the collective administration of rights. Otherwise the transaction costs involved in licensing over 9,000 cable operators in the U.S. will negate whatever benefit is derived from a repeal of the compulsory license. At the same time, the Europeans should consider whether pay-TV and pay-per-view signals are properly subject to collective administration under the satellite directive. Pay-TV and pay-per-view transmissions were excluded from the U.S. cable compulsory license in 1976 and should similarly be excluded from the EC satellite directive.

IV. Conclusion

We are at a critical crossroads in international copyright. Bureaucrats in Brussels and other capitals are seeking to make deals involving immense issues of international trade and to subvert basic copyright principles in the process. The main losers in this battle will be the authors, performers and producers of the world and the societies and organizations that represent them. While these battles rage, technology will exploit the disunity of the copyright community, and advance, unchecked, over the playing field of intellectual property. The copyright community needs to work together during this critical time to preserve the principles that have guided us in the past and to seek reasonable accommodations for the future. We should not let governments dictate solutions that produce confrontation instead of conciliation and destabilization instead of harmonization. The road we travel and the direction we take is within our control. Let us make sure it is the right one.

DIGITAL TECHNOLOGY, SOUND RECORDINGS, AND THE PROTECTION OF PERFORMERS

by

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This paper will examine the history of the creation, distribution or transmission, and private duplication of sound recordings in the United States in relation to the legal protection accorded to sound recordings and the parties that create those recordings.

The paper will, more importantly, analyze the substantial impact that digital technology has had and will continue to have on the creation, distribution and duplication of sound recordings, show the adverse consequences for performers, and assess the adequacy of legal protection for sound recordings as technology changes.

I. Early technology

A. The creation of sound recordings

The late 1800s saw the advent of a lively recording industry in the United States. Early recordings, first cylinders and then flat shellac discs, were relatively poor quality due to the materials used and the acoustical methods of recording and reproduction of sound. In short, "a pattern of sound energy was mechanically transmitted to a stylus through the vibrations of a diaphragm."² The stylus cut a corresponding pattern on the disc or cylinder.

Production of sound from the disc, in essence, reversed the process used to make the recording. A steel needle riding in the record's grooves "transmitted its vibrations through mechanical linkage to a diaphragm which set the air in motion in a resonating chamber such as the famous 'morning glory' horn" seen on old "victrolas" made by the Victor Talking Machine Company founded in 1898. In these early days of acoustical recording, the ability to produce a loud sound was an important requirement for a successful recording artist. In fact, magazines of the that time reported that Enrique Caruso's popularity as a recording star was in part due to his ability to sing loudly without yelling.³

Over the early years of sound recordings, improvements in recording fidelity and dynamic range came as a result of refinements in recording technology as well as electronic and mechanical components. However, recordings still relied on the same acoustic principles--a needle vibrating in a groove. Dynamic range was limited and high and low frequencies were not reproduced well or at all in some cases.

B. The dissemination of sound recordings

In addition to the sale of sound recordings, a radio distribution system had its start in the early part of the 20th century. The transmission of sound had inauspicious beginnings too. Dr. Lee de Forest, generally regarded as the father of radio broadcasting, transmitted phonograph music from the Eiffel Tower in 1908. It's doubtful that this experimental broadcast was heard by more than a handful of people since radio receivers had yet to be mass produced. He also built and operated an "experimental radiotelephone station" in this country in 1916 with which he "broadcast" phonograph records and announcements.⁴ Shut down during World War I, de Forest resumed broadcasting in 1919 only to be forced off the air by a government radio inspector who told him that "(t)here is no room in the ether for entertainment."⁵

Developments in recording technology accompanied the growth of the broadcasting business in the late teens and early 1920s. Electronic components were substituted for the crude mechanical or acoustic parts of early "talking machines." A microphone and pickup head replaced the mechanical linkage to translate mechanical vibrations into electrical impulses that could be amplified with less distortion. Around the same time technology made radio receivers widely available for the first time. Quickly, the radio industry began to gain momentum. RCA Victor grew out the Victor Talking Machine Company and Columbia Broadcasting developed from the Columbia Phonograph Company to name just a few. The combination of recording technology, receiving technology, and an over the air distribution system made music available to a much larger segment of the public.

Even at the end of this period, however, the broadcasting of sound recordings was not extensive. While there is some dispute as to the very first broadcasting station, credit is generally given to KDKA which went "on the air" from the roof of the Westinghouse factory in Pittsburgh on November 2, 1920 playing a mix of banjo music, phonograph records and providing Harding-Cox presidential election results.⁶ No matter which station properly claims the distinction of being first, suffice it to say that the distribution system that existed in the 1920s and 1930s was exceedingly small by today's standards. In 1945, twenty years after the start of commercial radio broadcasting, there were fewer than 1,000 commercial radio stations licensed to operate in the United States compared to ten times that number today.

Of course, it still was not possible for ordinary citizens to copy sound recordings for themselves since mass produced recording technology was many years away. Those who wanted their own copy of a recording had to buy it for their collection.

Despite its limitations, for most people the technology which permitted sound recording and transmission provided exciting alternatives to many who had only had the opportunity to experience live performances before.

II. The middle period--1948 to 1980

A. Sound recording technology improves

The late 1940s ushered in a new period for the creation, dissemination, and, for the first time, the private copying of sound recordings and transmissions. It was 1948 that recording technology evolved significantly with the commercial introduction of "microgroove" recordings for home use.

"LP" (long play) and "EP" (extended play) recordings represented several major improvements in the creation of sound recordings. Old shellac records were thick, heavy and brittle. New recordings used vinyl plastic, a much lighter, cheaper, more durable material. Old records operated at 78 RPM, a rate with little significance except that it was fast enough to provide relatively uniform turntable speed with inexpensive motors and equipment. New microgroove recordings, with 2-3 times as many grooves to the inch, operated at 33 1/3 or 45 RPM. Importantly, the new 33 1/3 RPM recordings were also easily adaptable to the broadcasting business since they permitted the recording and replay of a full 15 minute radio program on one side of a 16 inch disc. While early on the networks had frowned on the use of recorded material, these recordings were perfect for use by local stations. These new LP and EP records were coupled with improved pickup heads which allowed much lighter needle pressure and, consequently, less wear and noise from the record.⁷ Put together these developments represented substantial strides toward higher fidelity recordings at lower price. The noise inherently created by the mechanical action of the needle riding in the groove of the record could not however be eliminated.

Magnetic recording tape technology, commercially developed at the same time, was seen as a remedy for some of this problem. Now the recording medium could be any sort of flexible material such as wire or tape which could be passed over a recording or pickup head. In fact, one of the crewmen on the Enola Gay carried a wire recorder with him to record the reactions of his fellow crew members to the atomic explosion at Hiroshima, Japan. In the early 1950s a plastic tape with a thin metallic coating was introduced and quickly replaced all metal recording media. With all of these media, the recording head essentially consisted of a small electromagnet whose electromagnetic properties could be modulated by electrical currents forwarded by an audio source. Tape passing over the head became magnetized in a corresponding pattern and could be read by a pickup which translated the pattern back into electrical information for delivery to an amplifier and ultimately to speakers. The amount of information that could be stored on early devices depended, in part, on the speed at which the tape passed over the recording head. The higher the speed, the more information that could be stored. Tape speeds of 3 3/4, 7 1/2, and 15 inches per second were typically used. This technology also facilitated the advancement of motion pictures when a magnetic strip for sound was added to motion picture film.⁸

B. The distribution system expands and improves

Following World War II there was a significant expansion in the American radio broadcasting industry. Radio stations made their way into many small and medium sized towns that had never had service before. Although higher quality FM broadcasting technology was available, for a number of reasons (including government frequency band changes and manufacturers' concentration on producing televisions rather than FM radio receivers) most new stations were on the AM bands. The quality of music broadcasting suffered since AM stations could not reproduce frequencies much above 5,000 cycles and, consequently, could not transmit much of the richness of recorded music.

As recording technology improved, consumers expected the same from their radio broadcasts. Manufacturers responded with the production of FM receivers that, in addition to being freer from static and interference, could also faithfully reproduce more of a recording's sounds and fullness. FM broadcasting though suffered from its own limitations--shorter geographic reach and the inability to curve around hills and contours in the land. Taller antennae and more powerful transmitters would follow but many parts of the country remain unsuitable for good FM broadcasting even today.

In the mid 1960s radio broadcasting technology improved radically when engineers figured out a way to split the FM signal into right and left channels. Stereo broadcasting was born and FM became the band of choice for music lovers. Although many industry analysts predicted the death of AM radio broadcasting, it simply adapted. Today AM broadcasting in the United States focuses on talk, news and sports programming formats.

C. The emergence of private copying

The development of magnetic tape was profound for reasons other than the creation of recordings. For the first time in history the end line consumer could record or duplicate sound recordings or transmissions at home in addition to purchasing prerecorded music on tape. While early tape machines were very large and heavy, the introduction of the transistor allowed equipment manufacturers to replace tubes and greatly reduce the bulk and weight of these machines. Of course, tape machines, no matter how advanced, could only record the sounds that were forwarded to it. And what was forwarded to it was either a scratchy analog recording or a radio signal interrupted by static and commercial breaks.

In the late 1960s tape technology allowed machines to become smaller, lighter and less complicated with the introduction of cassette players and recorders. Eight track tape players came and went. In the 1970s advances in technology, such as Dolby sound, electronic tuners, more sensitive microphones and miniaturization of components as well as competition by equipment manufacturers and record labels, not only improved the recordings and brought down prices but, also, they brought the consumer the same technology in his or her car. The opportunity to carry your favorite music with you in the car without commercial interruption popularized the home recording of music. Compared to what existed before, the sound was remarkable but a new and even more dramatic development was about to come.

D. The legal protection of sound recordings

Legal protection of sound recordings lagged significantly behind the burgeoning technology. There were attempts throughout the 1920s, 30s and 40s to make sound recordings copyrightable, but opposition from broadcasters and copyright owners of traditional works effectively stifled those initiatives. By the late 1960s tape piracy was rampant and although many state laws prohibited tape piracy, it was clear that national legislation was needed to stop illegal duplication of recordings. In 1971, Congress amended the 1909 Copyright Act to create a limited copyright in sound recordings "fixed, published and copyrighted" on and after February 15, 1972. Sound recordings were specifically recognized as copyrightable subject matter in Section 102 of the 1976 Copyright Act and the 1971 provisions against unauthorized duplication were incorporated into the 1976 Act.

Curiously, the full scope of the rights enjoyed by every other copyrighted work was and has not been extended to sound recordings. The 1976 Copyright Act specifically excludes sound recordings from the categories of works accorded the rights of public performance. This is a critical omission. Attempts had been made in the revision process leading up to the enactment of the 1976 Act to include a performance right in sound recordings. In 1969, a performance right appeared in the revision bill which provided a compulsory license scheme under which record companies and performers would divide equally the proceeds of the performance right. Again, under pressure primarily from broadcasters, Congress eliminated the performance right in sound recordings from the revision bill. The bill passed, and in Section 114(d) it called on the Register of Copyrights to submit a report to Congress setting forth recommendations as to whether the law should be amended to "provide for performers and copyright owners ... any performance right in such material." On January 3, 1978, the Register issued her report which strongly favored the adoption of a performance right, and Congress held hearings on bills which would have established a compulsory license with royalties for commercial performances. To date, however, no action has been taken and the creators of sound recordings remain outside the umbrella of full copyright protection.

It is well settled under United States law that the contribution of performers whose performance is captured on a sound recording is an original creation which is constitutionally protectable. In a U.S. Supreme Court case involving the constitutionality of a California anti-piracy statute, Chief Justice Burger strongly suggested that the contribution of performers to a recording constitute the "writings of an author" within Article 1 of the U.S. Constitution.⁹

In a much earlier test case brought in State Court by the well-known band leader, Fred Waring, the question of a performer's right first came before the courts. In that case the Pennsylvania Supreme Court posed the following question:

"Does the performer's interpretation of a musical composition constitute a product of such novel and artistic creation as to invest him with a property right therein?"

The Court answered the question, in part, as follows:

"A musical composition in itself is an incomplete work; the written page evidences only one of the creative acts which are necessary for its enjoyment; it is the performer who must consummate the work by transforming it into sound. If, in so doing, he contributes by his interpretation something of novel intellectual or artistic value, he has undoubtedly participated in the creation of a product, which in no way overlaps or duplicates that of the author in the musical composition."¹⁰

Other State and Federal Courts also recognized the contribution of the performer. In Capitol Records, Inc. v. Mercury Records Corp.,¹¹ Judge Learned Hand opined on the creativity and potential for copyrighting a performance:

"(i)n the vast number of renditions, the performer has a wide choice, depending upon his gifts, and this makes his rendition pro tanto quite as original a "composition" as an "arrangement" or "adaptation" of the score itself, which (the copyright law) makes copyrightable. Now that it has become possible to capture these contributions of the individual upon a physical object that can be made to reproduce them, there should be no doubt that this is within the Copyright Clause of the Constitution."

E. The impact on performers

Before going on it is important to stop for a moment and discuss the impact of this system of sound recording, distribution and copying on performers vis-à-vis the legal protection that exists.

As stated above, analog recordings, no matter how advanced, could not record sound as precisely as it was played live. The transmission of music by broadcast stations likewise suffered from physical and technological limitations as well as the constraints of the commercial marketplace. Home recording equipment, despite its continuing improvement, was not capable of capturing sound as accurately as the disc produced from a master recording and purchased in a store. As a consequence, consumers were generally able to own quality copies of sound recordings only if they were willing to purchase copies of recordings at a retail outlet. In fact, by the end of this period there were over 500 million copies of LP/EPs, cassettes, and singles sold each year.¹²

As our domestic system of radio broadcasting grew along with sales of prerecorded music, vocalists and musicians naturally became more and more concerned with the extensive use of their performance by radio stations without compensation. They knew that such free use was in stark contrast to others such as song writers and arrangers who contributed to its creation and quite properly received royalties. Performers were only partially assuaged by the persistent claim that broadcasts of their work promoted the sale of their recordings at the retail outlet for which they received compensation. Whatever differences may exist between performers and their record labels over accounting and contracting practices, artists understood that it was difficult to collect money from their companies when the label itself was not receiving any compensation for the public performance of the work.

III. The digital revolution

A. The creation of "perfect" recordings

The creation and distribution of compact discs (CDs) in the early 1980s resulted in a quantum leap forward for recording technology. As early as the 1960s articles appeared in technical journals on the nature and features of digital recording technology. These recordings would be produced so that the "original waveform is digitally coded and the information in it is represented by the presence or absence of pulses of equal strength making it less subject to degradation than a conventional analog signal."¹³ A digital linear code consisting of a series of 16 zeroes and ones, when reproduced, represents almost precisely the same sound as when it was recorded. True concert hall sound was now possible in the home and limited not by the recording, but rather by other equipment such as speakers. The sound of CDs was so good that even when re-recorded in the home on an analog machine and blank tape it was a tremendous improvement over previously existing technology. "Without question, CD wins the award for best audio technology not invented by Thomas Edison."¹⁴

The impact was immediate. In 1985, three times as many LPs were being sold as CDs. In 1992, only a few years later, over 400 million CDs a year were sold (a 20% increase over the prior year) and the sale of vinyl discs has dwindled to an almost non-existent 2 million units per year. In 1992, the sale of CDs also exceeded the sale of prerecorded cassettes for the first time in history.¹⁵

There are now almost 100,000 titles recorded on digital compact disc and the number is growing every day.

B. The distribution system goes digital

Our distribution system for sound recordings is fast approaching the day when it too fully embraces digital technology. Known as digital audio broadcasting (DAB) or digital audio radio (DAR), it offers the advantage of transmitting high quality digital sound without any of the problems associated with present technology (transmission interference, limited geographic reach, or the high power demands of present transmission technology). Digital audio radio can be "broadcast" from terrestrial towers, satellites, or through cable wired to the home. A few cable systems, Digital Cable Radio, Digital Planet, and Digital Music Express, have already started service offering as many as 50 channels of commercial free, digital sound, from soft rock to classical music, in different parts of the country for a relatively small monthly subscriber fee. Everyone from traditional broadcasters to telephone companies have expressed interest in participating in this part of the business and, as recently as February 1993, Time Warner Cable and Sony Software Corporation paid \$20 million to buy a piece of Digital Cable Radio. Satellite services expected to commence service in 1995 offer even more flexibility and choice to the consumer. These new distribution technologies will permit us to call up sound recordings "on demand" in our home or get in our automobile in New York, drive 2,500 miles to Los Angeles and never lose reception of 50 channels of perfect digital sound.

In a 1991 report the Register of Copyrights concluded properly that the combination of digital audio recordings and DAB was very likely to impact the retail sale of sound recordings adversely.¹⁶

The President of Satellite CD Radio, Robert Briskman, stated recently that "(b)roadcasters have little to fear from Satellite CD Radio ... It will have only minimal effect on its land-based counterparts because its revenues will come from subscriptions, not advertising. Those who should worry are the makers of CDs and cassettes."¹⁷

C. Perfect digital copies at home

As if the digital creation and distribution of sound recordings isn't revolutionary enough, a few months ago consumers were offered the first opportunity to digitally duplicate or record music in their homes with the introduction of Digital Compact Cassettes (DCC) by Philips, Digital Audio Tape (DAT), and the digital Mini Disc (MD) from Sony. All of these formats offer prerecorded CD equivalent sound to the average consumer and the ability to use blank digital media and recording equipment to record copies of one's favorite music at home.

D. The revolution continues

The march of technology is not stopping or slowing, nor is it limited to audio only technology. New digital technologies allow the purchaser to interact with and/or manipulate data. Multimedia technologies such as CD-ROM (Compact Disc-Read Only Memory) and CD-I (Compact Disc-Interactive) will be followed by others already in development.

They function in many respects like the floppy computer discs that many of us are now familiar with, except that these discs hold much more information. A typical CD-ROM disc is capable of storing as much information as approximately 1,000 floppy discs or roughly 50 text books. CD-Is allow the viewer not only to call up information but, also, interact with, or become a part of, that presentation.

Digital recording technology, massive storage, and interactive capabilities take these technologies far beyond the ordinary computer, however, and make them particularly attractive for use in the entertainment world, including applications that have their origins in the sound recording area. Let me highlight a few products that are already available or will be shortly.

The CD-I, "So You Want to be a Rock and Roll Star," allows a user to manipulate the recorded vocal and musical portions of rock classics such as "Sittin' on the Dock of the Bay" or "Stand by Me" so that he or she can sing or play along with those songs. Sheet music can be displayed on a monitor along with other visual images.

CD-ROM music videos by Sony reportedly permit users to make their own videos with artists like Kriss Kross and C+C Music Factory, incorporating vocal tracks or concert footage as well as movie and video clips.

Upcoming multimedia CDs by artists such as U2, Peter Gabriel, and others are supposed to allow the user to listen to perfect digital recordings of songs played at concert and, at the same time, view video footage of the concert, lyrics, and other interesting information.

The CD-I "Golden Oldies Jukebox" is advertised as follows: "Top tunes of the '50s and '60s are remastered in digital audio. Watch related videos and lyrics cued in sync with the music. Create a custom playlist for parties or for personal listening."

"The possible CD-ROM products which feature music are endless. The use of audio has in the past gotten somewhat of a bad rap because of the low quality available. Home video games, arcade games, and computers have driven many parents and friends crazy with a steady stream of 'beeps and boings.' That sound can now be replaced by high-quality music ...

"As technology allows us to present sound in different ways within new environments, it is important that CD-ROM is seen as a consumer oriented medium rather than as a plaything for those who are obsessed by data and technology ...

"A shared vision of this technology, resulting from the collective wisdom of the computer, publishing, and entertainment fields, is necessary to put a cap on the acronym explosion, and bring a simple, and powerful, message to the marketplace ...

"The growth in the CD-ROM industry will ultimately be determined by the quality of the products produced. And the quality of the products depends entirely on the skills and vision of the people who produce them."¹⁸

F. Technology and the law now provide a disincentive

What distinguishes this new world of CD, CD-ROM, and CD-I entertainment from the past and how does it impact performers?

First, all formats offer perfect digital sound. Second, the distribution system will allow users to access perfect digital transmissions, on demand if they so desire, without ever buying a "hard copy" of the product from a retail store. Third, new digital recording equipment allows the user to make perfect copies of the recording.¹⁹ And fourth, the user can retrieve, manipulate and/or add pieces of information they receive to other recordings to create "new" works for the future. Thus, although dependent on the work of the performer, the new technology potentially offers the worst of all worlds. Performers suffer the double indignity of not being paid for their recordings and having someone else pirate their creative efforts.

As discussed above, current U.S. copyright law does not recognize a performance right in sound recording. This loophole means that unlike owners of other works protected by the law, performers and record labels do not have the right to license, or refuse to authorize the distribution of their work over the air or by cable--digital or otherwise--nor do vocalists, musicians, or recording companies receive any compensation for these performances. This longstanding inequity will become even more unfair as compensation that is generally tied to the sales of prerecorded music declines and eventually disappears.

IV. Conclusion

While some broadcasters and producers in other media may smile contentedly at this state of affairs, it is without vision of the future. Others are more enlightened. Performers and record producers in the U.S. understand that there is a mutuality of interest on this subject. The creation of new works and success for both performers and producers of sound recordings will only be assured if the efforts and creativity that breathe life into a sound recording are adequately protected, promoted and rewarded. In sound recordings and audio-visual works all creators interests, not just some, can and should be addressed.

On behalf of performers in the United States, we thank the World Intellectual Property Organization for the vision that allows it to understand these mutuality of interests, the understanding of macro-economics that demands rationalization of laws across national boundaries, and the energy to undertake efforts like this one that will affect change.

New technology will educate, entertain, excite, and inform us in ways that we never dreamed possible. The critical first task is to see that the people who make it all possible through their creative efforts, in this case vocalists and musicians, are protected and rewarded. Now is the time to start.

NOTES

- 1 Bruce A. York, Esq. is the National Executive Director of the American Federation of Television and Radio Artists (AFTRA) in New York City, N.Y. Arthur J. Levine, Esq. is counsel to AFTRA and the American Federation of Musicians and an attorney specializing in copyright, patent and trademark law at the firm of Finnegan, Henderson, Farabow, Garrett & Dunner in Washington, D.C. Also contributing to this article was Mr. Peter Cleaveland, AFTRA National Representative.
- 2 Broadcasting in America, Sydney W. Head, Riverside Press, 1956, p. 68.
- 3 Broadcasting in America, supra, pp. 68-72.
- 4 Broadcasting in America, supra, at 102.
- 5 Father of Radio, Lee de Forest, Wilcox & Follett Co., 1950, p. 351.
- 6 Other stations claiming the distinction of broadcasting first were KQW in San Jose, California, 2ZK in New Rochelle, New York, and station 8MK in Detroit, Michigan (now known as the Cap Cities/ABC station WWJ). Broadcasting in America, supra, pp. 107-108.
- 7 Broadcasting in America, supra, p. 69.
- 8 Broadcasting in America, supra, pp. 69-70.
- 9 Goldstein v. California, 412 U.S. 546 (1973).
- 10 Waring v. WDAS Broadcasting Station, Inc., 327 Pa. 433, 194 Atl. 631 (1937).
- 11 221 F. 2d 657 (2d Cir. 1955).
- 12 The Recording Industry Association of America (hereinafter "RIAA") 1992 Year-end Statistics.
- 13 The Oxford English Dictionary, second edition, 1989.
- 14 Ken C. Pohlmann, "The Sound of Things to Come," Stereo Review, October 1992.
- 15 RIAA 1992 Year-end Statistics.
- 16 U.S. Copyright Office, Copyright Implications of Digital Audio Transmission Services, October 1991.
- 17 Broadcasting, October 12, 1992, p. 12.
- 18 Chris Andrews, "The Evolution of CD-ROM: Interactive Multimedia Opens Up New Possibilities for the Compact Disc," NARAS Journal, Fall 1992, p. 30.
- 19 In late 1992, the Audio Home Recording Act was enacted in the United States. This legislation provides some protection against the private digital copying of recordings and establishes a system of levies for the sale of digital recording equipment and blank digital media. While this Act is an important first step in the right direction, it addresses only the area of private copying and is, therefore, only a small piece of the puzzle being addressed by this paper--the digital transmission or

**COPYMART: A NEW CONCEPT
--AN APPLICATION OF DIGITAL TECHNOLOGY TO THE COLLECTIVE
MANAGEMENT OF COPYRIGHT--**

by

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1. Introduction: Towards "smart" coexistence of digital technology and copyright

Mass copying is one of the most serious copyright problems caused by modern high technology. No appropriate solution has yet been found. Unfortunately, this is a commonly acknowledged view. Certainly, the existing systems of collective clearance of copyright in various works¹ are to some extent contributing towards solving the problem of mass copying. But an inherent defect here is the discrepancy between the compensation or levy imposed on and collected from possible users of copyrighted works, and the identification of the rightsholders whose works are copied. In other words, the right to compensation or a levy arising from the copying of others' copyrighted works comes into existence without being able to identify the holder of that right at any stage of copyright clearance. Therefore, the existing systems of collective clearance of copyright, deviate, more or less, from viewing copyright as a private right.²

Furthermore, we are now facing another kind of complexity in this regard: the problem of mass copying looks more and more complicated as digital technology rapidly penetrates into the field of multimedia products. Copyright licensing practices in respect of various works are having not impossible, but certainly unprecedented difficulties in managing the utilization of works in multimedia works. Statutory introduction of a mandatory license scheme would be one response to such difficulties. However, I do not intend to go into this issue here. My paper aims to make the copyright regime, international or domestic, more compatible with and friendly to business and technology, by introducing a contract-based approach to the collective management system of copyright, coupled with full use of digital technology. This certainly does not mean that the copyright regime should give way to business and technology. Rather, effective use of digital technology and a new contract-based system for dealing with copyright can permit business, technology and collective management of copyright of any kind of works to coexist in a "smart" way in the coming multimedia age.

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My proposed contract-based model will create a new market for handling collective management of copyright, enabling us to access copyright information filed in that market and to obtain copies of intended works of various kinds from it. The proposed market, which I call "copymart", is a database. A building used, for example, for many stock or commodity markets is not necessary for this market. The copymart is a marketplace, where copyright information is available and where works, copyrighted or not, may be obtained by way of negotiation. As a market, it can lead to free competition in copyright.

2. A predecessor: copy-sale model

2.1. Copy-sale for traditional works

Before discussing in detail my proposed copymart model, it is useful to comment briefly on its predecessor, the copy-sale model for printed materials.³ The copy-sale model presupposes that publishers sell a part of a copyrighted work. It is based on contracts for sales of a part of books or journals. Under the copy-sale model, a copying record is electronically stored in copying machines with a data processing function, and payments for copies made are transferred to the account of each copyright holder by way of a VAN-system.⁴

This copy-sale doctrine will be replaced by the newly proposed model of "copymart", so it is not necessary to explain it in detail here. However, it illustrates an emerging process of a market concept being mobilized to resolve the problem of mass copying, and a first step towards the "smart" coexistence which my proposed copymart aims to achieve, so some comments are in order.

Copy-sale model is designed for traditional works such as books or journals. Its basic features are as follows:⁵

- (a) Books or journals are sold per copy at bookshops or other facilities;
- (b) "identification data", including the author, publisher, title, page and per-copy-price is printed invisibly, by using a bar code system or OCR, on each page of the book or journal;
- (c) the copy machine is equipped with a data processing function to read, store and process the invisibly printed identification data of a copyrighted work;
- (d) copying is permitted only by using a particular access device such as integrated circuit cards, prepayment cards or vouchers;
- (e) such a device electronically connects an act of reproduction with the rightsholder's identification data;
- (f) payments for copies made are collected from each user and distributed to each rightsholder based on the record in the copy machine.

Digital technology is utilized especially in (c), (d), (e) and (f). The VAN-system which underlies the copy-sale business provides the technology to integrate the above described printed identification data, the data processing of the copy machine and the user's data as a computer-assisted information system. The result is that payments for copies made are automatically sent to the account of copyright holders.

It is clear that under the copy-sale model just outlined, copyright is enforced as a private right.

2.2. Copy-sale in nonprint electronic publishing

Notably, the copy-sale model is presently operating in the new business of nonprint electronic publishing. Compared with that in traditional publishing, the copy-sale scheme in electronic publishing is, technologically speaking, an advanced one, because the copyrighted works there are all digital.

Most on-line information services offer their customers access to databases provided by a variety of publishers. The services negotiate contracts with the owners of the databases for the right to distribute them, and pay royalties based primarily on how much the database is used.⁶ Copies of digital works in a database are distributed by agreement, with payment to be made in accordance with the length of time spent searching the database. The copy-sale model is operative in this field of business and may apply to the management of copyright not only in printed materials, but also to almost all kinds of copyrighted works. This becomes possible with the extended use of digital technology. The proposed copymart is one example of extending the use of a contract-based model combined with digital technology.

3. Digital technology, multimedia and copyright

3.1. Characteristics of digital technology

Some characteristics of digital information are that works are easily copied, they can be easily transmitted to other users or be accessed by multiple users, they can be easily manipulated and modified, works are essentially equivalent (texts, video, or music are all reduced to a series of bits and stored in the same medium), works are inaccessible to the user without hardware and software tools for retrieval, decoding, and navigation, and that software also allows for new kinds of search and linking activities which can produce works that can be experienced in new ways.⁷

These technological characteristics bring about several controversial discussions in respect of copyright protection of digital data and multimedia products. This paper does not aim to cover all aspects of the impact of digital technology upon copyright; some consideration is necessary to understand the nature of the proposed copymart, which is a typical multimedia product using digital technology.

3.2. Copyright issues with respect to digital technology and multimedia work

As in many other countries, a number of Japanese organizations, governmental and nongovernmental, are investigating--like this Symposium--various perspectives on copyright with regard to multimedia and digital technology.

Just to point out some of these, the concept of a "copyrighted work" is being reviewed in respect of multimedia and digital technology. In the USA, it is questionable whether or not the fixation requirement makes "works" in the form of digital technology unprotectable.⁸ In Japan, a fixation of works is not required for copyright protection.⁹ However, a more difficult and common issue would be whether or not digital works, constantly subject to modification and changes, as typically found in an interactive multimedia title, can be a work under the existing copyright law.

Furthermore, current copyright law treats works according to the statutory category to which the work belongs, and there is no clear category for a multimedia or mixed media work.¹⁰

Another obstacle to producing multimedia works is that there are no channels for clearing copyright of works to be used in them and no agreed rates of royalties for creating multimedia works. Present trends are such that multimedia producers are limited to works in the public domain, or works created anew especially for use in multimedia presentations.¹¹ Finally, the authorship of a multimedia work deserves particular attention. The person who turns a lot of different objects (words, paragraphs, pictures, sounds) into a multimedia product by establishing links among them would probably be considered its author.¹² This issue needs further discussion in the light of corporate creation of multimedia titles.

3.3. Copymart as a multimedia work, the product of digital technology

Since the proposed copymart itself is a multimedia type of database, and the product of digital technology, I am interested if and how this copymart would enjoy copyright protection. However, since this problem is not the primary concern of my paper, it suffices for me to suggest some of those specific impacts of digital technology upon copyright and their implications for the proposed copymart.

4. Copymart: a contract-based market model for copyright

4.1. Structure of copymart (CM)

The proposed copymart (CM) consists of two kinds of database: the copyright market (CRM), and the copy market (COM).

In the copyright market (CRM), copyright information is filed by rightsholders of copyrighted works. Everyone may access this market and obtain copies from the copy market upon request and payment.

The copymart (CM) is a contract-based system which integrates the operation of these markets as a VAN-system. It is a market where copyright information is offered, and copies of works, copyrighted or not, may be obtained by agreement among the parties involved. The copymarket may become a competitive market if a substantial amount of copyright information are registered in several kinds of copymart. This would bring about a new copyright regime "coexisting" with high technology and business.

4.2. Copyright market (CRM)

The copyright market (CRM) is a database where individual rightsholders or organizations or agents doing business with copyright matters can file their copyright information, including identification of the name of the author and rightsholder, categories of copyright and neighboring rights, kinds of works, a brief description of works, duration of copyright protection, license or sales conditions and terms on each copyright and neighboring rights¹³, prices in accordance with the scope and type of use of copyright, etc. The copyright market (CRM) may serve to find works to be used for an intended purpose.

License or sales conditions and terms may be changed by rightsholders by using their password. The change may be made either on any item registered or on certain items specified by the VAN-system.

Works may be described by writing outlines with several key words or sentences, or by demonstrating a small portion of a musical work or picture.

Information available in the copyright market (CRM) may extend to that on unprotected works. The copymart owner can determine the extent of the inclusion of such data, taking into account the purport of each copymart. This extended copyright market (CRM) will enhance its value, because it can be used by the copymart customer to access as many as possible works, copyrighted or not, which are fit for his or her purposes.

4.3. Copy market (COM)

The copy market (COM) is a database which upon request and payment distributes copies of works to copymart customers. Copies of works of various kinds (literary works, musical works, artistic works, architectural works, graphic works, cinematographic works, phonographic works, computer programs, etc.) made in accordance with the license or sales conditions and terms stipulated by rightsholders registered in the copyright market (CRM) can then be distributed to customers.

Analog works can be distributed under separate conditions set forth in the copyright market (CRM). Even unprotected works, which are registered by the copymart owner in the copyright market (CRM) and which are stored in the copy market (COM), may be distributed to customers upon request and payment. In this case, no payment for copies themselves is necessary, but a service fee may be charged.

4.4. Copymart (CM) as a VAN-system

4.4.1. Growth of copymart (CM)

The copymart can be comprehensive. But most copymarts will, at least at the beginning stage of their development, be restricted in their coverage in accordance with their purposes. Of particular importance would be the size of the market for copyright. Also relevant would be the originality and creativity in selecting subject matters and works. Taking into account the future prospect of digital technology, the importance of copyright protection and the economic value of copymart, we would expect copymarts to grow by merger and acquisition.

4.4.2. Copymart contracts

The copymart described above is integrated as a VAN-system, which contains at least the following three contracts.

A contract for filing copyright information is concluded between the copymart owner and the rightsholders who file their copyright and neighboring rights. Charges may be imposed upon the filing rightsholders.

Another copymart contract is one for use of the copyright market (CRM). This contract is concluded between copymart customers and the copymart owner when customers access the copymart. An access fee will no doubt vary depending on single use of works or multiple use of works.

The third copymart contract is one for distribution of copies of works among customers, the rightsholders and the copymart owner. The copymart provides a market for negotiations between a customer and a rightsholder or multiple rightsholders.

4.4.3. Payment system

The VAN-system underlying the copymart regulates the payment system.

The filing fee would be paid to the copymart owner by rightsholders at the time of filing their copyright information. An access fee would be collected from copymart customers who use the copyright market, and would likely be lower for single use of one category of works, copyrighted or not, compared to multiple use of various categories of works. Payments for copies distributed to copymart customers are made by customers to the owner of copymart. Pricing will depend on the purpose for which copies are used (educational, academic, or business), how many copies are requested, etc.

Special service fees would be charged for making the copymart available for individual negotiations between customers and rightsholders.

Payment is made either within this VAN or by using a particular device to gain access to the copymart. Integrated circuits cards (IC cards), prepayment cards or vouchers could be used as such devices.¹⁴

4.4.4. Copymart (CM) as collective management of copyright

The copymart assumes that rightsholders take the initiative to file their copyright information with the copyright market, including the license or sales conditions and terms. In many instances, rightsholders often think of packaging related copyrights and neighboring rights into a combined set of license or sales conditions and terms. Such packaging of copyright information may serve to manage copyright collectively. This means that the registration by rightsholders of copyright information, though limited, contributes to collective management of copyright. In this sense, the proposed copymart serves as a contract system for collective management of copyright.

There would be another contribution of the copymart (CM) to such collective management. Copymart customers can access copyright information filed in the copyright market (CRM) and obtain copies of works of various categories from the copy market (COM). As a matter of fact, this transactional process serves the collective management of copyright, too.

An important role expected from the copymart in such collective management is also its special negotiation service. The copymart serves as intermediary to offer a market where copymart customers negotiate with rightsholders for license or sales conditions and terms regarding various kinds of works belonging to different rightsholders.

4.4.5. Moral rights

The issue of moral rights in a copymart becomes especially serious in the case of the interactive type of multimedia titles. Authors may prepare special clauses concerning moral rights. However, workable protective conditions and terms would, by the nature of such moral rights, be hard to determine in advance.¹⁵

4.5. Copymart (CM) as a "system contract"

Our society has to deal with problems which have been heightened or created by modern high technology. These problems are, for example, handling legal matters relating to "mass rights" in contracts, such as multiple claims in credit card transactions, ticket reservations in the travel agency business, collective settlement of debits and credits in electronic funds transfer (EFT). Collective administration of copyright is also a typical example of such problems.

Common to these problems is the use of a computerized system of information network which combines dataprocessing and telecommunication. We may characterize those transactions, if connected with such a computerized system, as "system contracts."¹⁶ It goes without saying that the proposed copymart is a typical example of such system contracts.

4.6. Multi-purpose uses of copymart (CM)

The copymart model should facilitate planning and producing multimedia works. In developing new multimedia titles combining various categories of others' copyrighted works, businesses will not be hampered by possible infringement of copyright, because the copymart enables them to make use of others' copyrighted works. There may emerge a new information business which engages in drafting designs for new multimedia works and selling such designs to multimedia businesses.

One of the most simple, but quite valuable use of the copymart is to be able to find materials relevant for research and then obtain them. This type of use of the copymart will replace the copy-sale model introduced in Part 2.

If we broaden our perspective and add some necessary changes to the copymart model, several new businesses are conceivable. For example, the copymart may function as an "electro-library" which every PC user can use at home, in the workplace or at school. It may also operate as an educational system, for general purpose or for a particular purpose such as preparatory courses for bar or university and high school entrance examinations. It may further be utilized as an entertainment center, such as an "electro-theater" offering PC users concerts, movies, operas, dramas, etc.

Last, but not least, the use of the copymart may extend to the distribution of computer programs or the layout-design of integrated circuits.

5. Conclusion

The concept of copymart needs further consideration with regard to its practical operation. At the same time, it should not be forgotten that the copymart model, even if ideally completed, can offer only a partial solution to the problem of unauthorized reproduction of copyrighted works.

Nevertheless, I hope the proposed copymart model may be a promising vehicle for solving the difficult contemporary problem of mass copying.

I conclude my paper by expecting that the proposed model may, as a new legal and social system, contribute to the development of culture and technology, and produce a new type of information culture for the coming era.

NOTES

- 1 See, for example, Collective Administration of Copyright and Neighboring Rights Report, prepared by the International Bureau of the World Intellectual Property Organization, Copyright November 1989, pp. 309-354.
- 2 See Zentaro Kitagawa, Copyright Clearance or Copy Sale--A Thought on the Problem of "Mass Right"--, AIPPI Journal, October 1989, p. 213.
- 3 See Kitagawa, *ibid.*, pp. 207-215.
- 4 VAN is an abbreviation for Value Added Network. It means an enhanced network service, including packet switched service and change of protocols, speeds, formats or codes.
- 5 See Kitagawa, *ibid.* (n.2), p. 211-212.
- 6 See U.S. Congress, Office of Technology Assessment, Finding a Balance: Computer Software, Intellectual Property, and the Challenge of Technological Change, OTA-TCT-527, 1992, p. 165.
- 7 See U.S. Congress, Office of Technology Assessment, *ibid.*, p. 170.
- 8 See U.S. Congress, Office of Technology Assessment, *ibid.*, p. 171.
- 9 The Copyright Act, Article 2, para. 1, subpara. 1, defines "work" as "a creative expression of thought or sentiment which falls within the literary, scientific, artistic or musical fields."
- 10 See U.S. Congress, Office of Technology Assessment, *ibid.* (n.6), p. 172.
- 11 See U.S. Congress, Office of Technology Assessment, *ibid.*, p. 173. My paper mainly focusses on this issue.
- 12 See U.S. Congress, Office of Technology Assessment, *ibid.*, p. 174.
- 13 It depends on the nature of works whether copies are sold or licensed. For example, a copy of ten pages of a book would be sold; but that of a computer program licensed to the copymart customer.
- 14 For the copymart to effectively function, a workable payment system is necessary, which is basically left for further interdisciplinary studies with other related fields.
- 15 Technology may afford us with some workable counterdevices against prohibited use of works causing infringement of moral rights. However, most of them will be of a temporary nature.
- 16 See Zentaro Kitagawa, Der Systemvertrag: Ein neuer Vertragstyp in der Informationsgesellschaft, in Festschrift für M. Ferid zum 80. Geburtstag (Frankfurt am Main, 1988), pp. 219-238.

**THE CHALLENGES OF COLLECTIVE ADMINISTRATION
IN THE WORLD OF DIGITAL TECHNOLOGY**

by

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I. Introduction

It has long been recognized that efficient exercise of certain authors'¹ rights requires collective administration and that collective administration benefits authors and users alike. The principal models for collective administration have been ASCAP² and its sister performing right societies around the world which license performing rights in musical compositions on behalf of their writer and publisher members and those of affiliated foreign societies. ASCAP has been engaged in collective administration for some eighty years--since 1914. The British Society, PRS, was formed a few months later. The French Society, SACEM, traces its roots back to Beaumarchais and 1851.

Performing right societies are no strangers to radical changes in technology. In ASCAP's experience--an experience shared by every mature performing right society throughout the world--those changes have required radical adjustments in operations. Examples are the great changes in means of public communication--radio, television, cable and satellite transmissions, and the great change from public performances that once were exclusively live to the omnipresent mechanical and electronic public performances by means, among others, of records, tapes and CDs.

¹ I shall throughout use the term "authors" to refer to both authors and the business entities that acquire copyrights from authors and exploit the copyrighted works commercially for their mutual benefit.

² Founded in 1914, ASCAP is the world's largest revenue producing performing right organization. Revenues in 1992 were \$390 million. It has the non-exclusive right to license the nondramatic public performance of music and the right to collect and distribute royalties for home taping.

Faced with these technological changes, performing right societies have responded in two ways. First, we have always preserved and used basic approaches that have stood the test of time--we have drawn on proven principles and organizing structures. Chief among these basic approaches is the fundamental assumption of copyright itself--that authors are entitled to control the exploitation of their creative works, and that control and the remuneration implied by control are societal imperatives if the arts and, indeed, human civilization is to thrive.

Second, we have recognized that technological change creates new possibilities that should be analyzed and used to the fullest to help achieve our goals.

Although I shall be discussing the challenge of collective administration in the world of digital technology from the perspective of performing right societies that are concerned with musical works, my remarks have wider significance. Music, of course, is not the only form of copyrighted work, and the performing right in music is not the only copyright right that is susceptible of collective administration. The success and growth of the Copyright Clearance Center here in the United States in licensing the photocopying of literary works on a collective basis proves the point. As I recall, ASCAP was a useful model in that regard. Collective administration of copyrighted works may well prove to be the natural and necessary response to many technological developments, and the "wave of the future" in copyright licensing. As Ralph Oman stated at the beginning of the Symposium, the digital environment must be brought within the control of authors. The control mechanism for me is collective administration and I believe my remarks are relevant to all collective administrations of copyright in the era of digital technology. But, of course, we are only at the very start of this new era, and our sight down this new road is necessarily limited. No doubt there will be many surprises along the way.

II. The functions of collective licensing organizations

Collective administration serves two principal and obvious functions: licensing users, and distributing royalties. These functions offer an analytical framework through which we may examine the challenges and opportunities presented by digital technology.

III. Digital technology and licensing

Digital technology impacts the licensing function in two ways. First, it presents the possibility of new uses of copyrighted works to be licensed collectively. Second, it presents possibilities for improvements in the administration of collective licenses as between collective licensing organizations and licensees. It provides the fast, simple clearance Charles Clark spoke of and it gives customers what they want when they want it, which is what John Baumgarten spoke of.

A. New licensing opportunities

We have heard speakers address in detail the many new uses of copyrighted works which result from the new digital technologies. Those uses will require licensing, in one form or another. To illustrate, let us focus on only a few visible new uses which will require licenses from musical performing right societies:

- digital over-the-air transmission of musical works ("digital broadcasting");
- digital transmission by wire or point-to-point services (such as cable or satellite carrier services);
- interactive digital transmission services, either into the homes or to other central locations (such as retail outlets selling licensed digital copies of recorded music), which may be accessed by anyone with computer and a modem;
- computer networks that make available on personal computers (PCs) the equivalent of radio or television transmissions (as exemplified by an article in the New York Times of March 4, 1993 entitled "Turning the Desktop PC into a Talk Radio Medium").

Most, if not all, of these uses may be licensed by existing means and structures, at least to some degree. For example, ASCAP's current forms of license agreement for radio broadcasters may suffice to cover radio broadcasts by digital rather than analog signals. Our current form does not authorize any re-broadcast or any reproduction. Experience may teach, however, that new limitations are fair and necessary, such as prohibitions against digital broadcasts of more than a set number of works in any album or announcing in advance when works will be performed in order to facilitate home taping. To say that the current form of license may suffice is not to say that the license fee will be the same. It may well be that there is greater value to the performance of music by digital transmission than there is by analog transmission. But the basic form and structure of the license may not need to be different. Indeed, if the conclusion is that the license fee or other terms should differ, the existing license will probably be the starting point for arriving at new license terms for digital transmission.

The same analysis holds true for all new uses. Building upon the extensive history of agreements voluntarily arrived at with users will simplify the task of meeting the new licensing challenges of digital technology.

B. Possibilities for licensing administration

You may be interested to know that ASCAP obtains non-exclusive rights from its members who voluntarily join the Society. ASCAP gives users blanket access to most of the world's repertory of music. Creators retain the right to deal directly with users; this is a requirement of ASCAP's anti-trust Decree. The Decree also requires that any user who wants a license simply writes requesting one--the rate is subject to negotiation and failing that is set by court determination. ASCAP is prohibited from licensing any right other than the nondramatic public performance of music and the collection and distribution of home taping royalties. Someday ASCAP or an organization

modeled on ASCAP, representing all rightsowners may be in a position to license all multi-media productions on behalf of all rightsowners. No doubt, this would be a policy decision for Congress due to the anti-trust considerations.

Back to technology and administration.

What will the impact of digital technology be on the administration of license agreements? I believe digital technology may not play a very significant role for the administration of license agreements, at least as between most collective licensing organizations and most users. Certainly, some benefits in administering licenses may result from this new technology. For example, many of ASCAP's agreements with single licensees extend to many locations, all of which must be identified, and the identifications regularly updated. Thus, a single ASCAP license with a fast-food restaurant operator may cover performances at hundreds of restaurants throughout the country. Those locations will change over time--some will be dropped and others added. We now encourage our licensees to submit computer-readable lists reporting all such changes.

To be sure, these are minor uses of the technology. Because most collective licensing organizations, like performing right societies, license through blanket licenses, which give users the right to use all the licensed works without significant recordkeeping or clearance of particular uses, the administrative advantages of digital technology--recordkeeping, for example--are largely inapplicable to the administration of the license as between the user and licensing organization.

If limited there, however, digital technology does surely hold much promise in the distribution function. And it may well be that these benefits will depend on license terms. For example, it is probable that the transmission of inaudible digital information identifying works performed by digital broadcasters would greatly aid in the identification of performed works and hence in the distribution of royalties. Accordingly, agreements with digital broadcasters will, I have no doubt, address the issue so that, by appropriate contractual provision, these means of identification are realized.

Further, there may be some forms of collective licensing which do not rely on blanket licensing--the licensing of mechanical rights comes to mind. In those cases, there may be administrative benefits from the use of digital technologies which may be relevant to the licensor-licensee relationship, and made part of the licensing structure.

IV. Digital technology and distribution

It is fair to say that digital technology will be of most significance to collective licensing organizations in their distribution function--getting royalties into the hands and bank accounts of authors. Obviously, digital technologies have been so used for many years. ASCAP's distribution system, based on a scientific survey of performances in many media, and incorporating a fine-tuned formula for objectively valuing different types of performances, could not function without computers. But the ever-accelerating development of digital technology makes further advances in collective administration

inevitable, and I now turn to examine those advances. To give you an idea of the volume of performances in the United States on radio, you may need to know that there are over 10,000 radio stations and there are over 600 million performances of music each year apart from commercial announcements, themes and station identifications. This is only one medium surveyed by ASCAP. We survey some 35 areas, including symphony halls, colleges and universities, background/foreground music services, cable services and television.

A. Identification of copyright owners

ASCAP has over 50,000 writer and publisher members. The other United States music performing right organizations, BMI and SESAC, have agreements with tens of thousands more. When members of all the world's performing right societies with which ASCAP has agreements are added, the number easily expands to hundreds of thousands. Because of the network of agreements among societies, each must be able to identify the members of all. Digital technology offers the best way to do so. An international list of the members of performing right organizations throughout the world (the "CAE list") which is the acronym for the French words meaning composer, author and publisher, has been maintained in microfiche format. This is an important research tool. In microfiche, it comes close to 500 pages. It is now available in CD-ROM and can be accessed from a PC work station. Instead of 500 pages of information, the data is stored on one disk.

On microfiche the data was accessible by writer and publisher name only. In CD-ROM the data is accessible not only by name, but by CAE number (each writer and each publisher has such a number), by society, by year of death, or by a combination of inquiry fields. Digital technology has obvious advantages. One not so obvious example is that when using the microfiche record, one had to have the exact spelling; in the CD-ROM format, approximate spellings suffice.

B. Identification of repertory

Digital technology greatly enhances the ability to handle and manipulate the large masses of data involved when a society keeps track of performances of the copyrighted works it licenses. This is especially true for performing right societies because, given the network of affiliations linking the societies of every country, there is truly a "world repertory" of music to be kept track of.

Thus, for example, a "World List" of "active" works of all performing right societies is administered by ASCAP. ASCAP is working to change the World List from microfiche to CD-ROM. This list is a very important resource for purposes of crediting performances to the proper copyright owners.

In ways that are not yet entirely clear, digital technology is likely to lead to greater transparency in the operations of all societies. With more transparency, one can expect national treatment to be even more the rule than it is today.

In many media--for example, radio broadcasting--non-live performances predominate. Hence record label copy is an important source of repertory information for performance surveys.

ASCAP has begun using a laser optical disk system for storing record label copy information. This new system, incorporating optical and digital technologies, facilitates efficient storage and research of information on 34,000 document images at a single PC. The paper source documents are scanned electronically, and stored as an image file which replicates the original. The information may be viewed at a video display terminal, or may be reproduced in paper on a laser printer. The data base (including several research fields) which manages the index now consists of 300,000 records. Thanks to this digital technology, the data is more easily accessible and more quickly located than in paper form, leading to a higher identification rate of performed works.

ASCAP also uses CD-ROM technology to access data on recording information accumulated by a consortium of libraries, the On-line Computer Library Center, as an adjunct to ASCAP's own data base of record label copy information.

C. Identification of uses

Different collective licensing organizations need to identify uses for different purposes. For example, mechanical right licensing, with its focus on individual uses of individual works, requires different information than do the blanket licenses offered by performing rights societies or organizations like the Copyright Clearance Center.

For ASCAP's purposes, the most crucial identification of uses of copyrighted works relates to our survey of performances. Expressed in the simplest terms, writers and publishers are paid based on the performances (and to some degree the history of performances) of their works. Determining which works have been performed, and how they have been performed, is not simple. Information supplied by users can form only a part of the picture for several reasons. Users are not required by law to keep records or to report their performances to ASCAP. They are often loath to incur the administrative expense of keeping track of what they perform even when contractually obligated to do so. The reliability of their reports must be constantly verified because of errors and because only the licensing society, and not the user, has data as to past performances on which a current payment may depend.

Digital technology presents great opportunities for assistance in the identification process. For example, new sound recognition technologies allow monitoring of broadcasts, matching the sounds transmitted by radio stations in their music programming with data bases of the same sounds. One way of accomplishing this has been widely discussed for many years: by encoding an inaudible digital signal to be transmitted when the work is transmitted. Such signals may be decoded and tallied instantly and automatically. If a particular recording of a particular work is stored in the distribution system's data base, it will be "recognized" when matched against a broadcast of the same record (all other things being equal). This technology has already been put into place for certain kinds of uses where the patterns to be stored are relatively few in number. The challenge now is how to make this technology viable for performing right societies whose needs are extremely broad and extremely deep. ASCAP is actively engaged in searching for ways to incorporate this technology into its systems at a reasonable cost.

We are all familiar with the musical "sampling" techniques that are prevalent in the "rap" music market. Bits and pieces of recorded works are taken, altered, and integrated into a new and different work. This presents problems not only for the rightsholders of the sampled works (such sampling has been held to be copyright infringement), but for organizations like ASCAP that seek to allocate royalties on the basis of performances rendered in various media and have to sort out the sampled material from the new works. Use of digital technology for identification purposes may help solve those problems. ASCAP now calls on a staff of music experts with extraordinary skills in identifying the diverse spectrum of music.

One of the great potential advantages of digital technology is cost savings. ASCAP operates essentially on a non-profit basis. All revenues are distributed to members and affiliated foreign societies after the deduction only of operating expenses which are under 20%. Thus, every dollar ASCAP has to spend on its operations is a dollar not distributed to authors. ASCAP constantly seeks to reduce its costs. Although the common assumption is that digital technology will reduce expenses, that "wisdom" must be verified in the real world. Technological systems of whatever type must be cost saving, else they are wonderful toys of little or no practical benefit whatever.

V. Conclusion

In copyright matters, as everywhere, "the only constant is change." I have discussed some of the challenges and possibilities that digital technology will bring to the collective administration of copyrights. I have come to this important meeting more to learn than to teach. My comments are necessarily tentative and surely incomplete. We are, as we seem constantly to be these days, at another new dawn of another new age of another new technological change. It is not easy to keep up. We constantly run faster as the pace of change accelerates. The authors whom we represent rely on us to keep pace. They also require that we remember that technology is not an end in itself--that it must be used to protect their rights as authors, to provide transparency in efficient operations and to promote national treatment for all.

**CONFLICTS AND CHANGES.
THE NEW TECHNOLOGIES IN THE PROTECTION AND ADMINISTRATION OF COPYRIGHT**

by

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I. Introduction

1. The dependence of the development of copyright, from its very beginning, on the development of technology is a commonplace in the legal literature. The birth of new inventions--involving the birth of new situations for the interests concerned--followed first by court interpretation of the authors' privileges, next by the extension of the statutory rights, has been the usual course of events ever since the 15th century.

The emergence of digital technology has, of course, triggered off the same vigorous development. Courts, scholars, local practitioners, legislators are evaluating the situation from the point of view of possible damage to the interests of copyright owners from the aspects of possible new rights, and as regards the impact of the computer and digital technology on the application of the international copyright conventions. Questions like the following are being scrutinized:

- Is the supply of data and works by computerized data bases to the public a restricted act under copyright?
- Is the digital version of a recording of a work an adaptation or a copy?
- Should the nature of certain rights of the producers of sound recordings be changed because of the digital audio-broadcasting (i.e., exclusive rights instead of a right to remuneration for the broadcasting of commercial records)?
- Should the individual style of an author or a performer be protected against sampling? etc.¹

2. However, there is another, relatively new side to the technology/copyright relationship. Computers--and in general digital technology--have opened up a new, direct way to protect the legitimate privileges of the owners of copyright against the excesses of the technology: this consists in restricting the application and the use of the technology by technical means. This self-regulation needs, of course, legislative support to compel the industry to this self-control or to the digital identification of works and recordings and--what is equally important--to prohibit the illegal use or the complicity in the illegal use.²

However, these supporting statutory measures need not be copyright measures, that is, not necessarily and exclusively. The U.S. Cable Communications Policy Act of 1984 and a French law on the Canal Plus TV program provide civil and criminal penalties for manufacturing or distributing any receiving equipment (such as converters) for illegal use.³ In these laws, the subject matter of protection is restricted to the program service which is insufficient from the point of view of the broadcast works and performances.⁴

Digital technology also allows the tracking of works and the close control and administration of mass uses of works and productions.

This new state of affairs, viz. the possibility of using digital technology in the protection and administration of authors' and neighboring rights generate questions of a new type:

- Should the technical control be imposed on industry and on the public at all?
- What would be the repercussions on national and international copyright?
- How could the use of digital technology influence the collective administration of authors' and neighboring rights?

This paper is an attempt to deal with this second, "new set of questions."

II. Factual background

3. Before doing so, we should have a look at the facts and possibilities of the development of digital technology as regards the use of this technology in the dissemination--and use in general--of the works and productions on the one hand, and in the control and tracking of the use on the other. A detailed presentation and analysis of this technology and these methods is not our task, we should be content with the basic references.⁵

Carriers of works

Different sound and video carriers appeared or are about to appear on the market which carry the sound and image frequency information in the form of a digital signal which can be laser-read (CD, DAT, DCC, CD-Video, CD-Photo, CD-I, etc.). The last mentioned is an interactive video compact disc, a so-called "multimedia product," where the user can intervene at any moment in the development of the program. These carriers permit an infinite number of duplications of perfect copies which are equal to the original.

Recording, storing

Still in the field of the dissemination of works and performances, recorders working with the digital system are coming onto the market which are intended as computer peripherals. Computer-maintained and searched databases can contain enormous amounts of audio, written and video works and offer them by individual telephone or glass fibre lines to the public ("music service," "publishing on demand," "information delivery in libraries," "pay-per-view," etc.). The data networks can be integrated.

Broadcasting

Digital technology also has an expanding role in broadcasting.

Digital Audio Broadcasting (DAB) allows parallel broadcasting from the same emitting station and within the frequency block of 1,5 MHz of several (six to ten) programs. The recipient of the signal will have the ability to make any number of distortion-free copies of the programs received over the air. This would allow--from the mid 90s on--raising the number of programs and the proliferation of thematic, e.g., musical-radio stations.⁶ This technology has more advantages on the national than on the local scale.⁷ Digital Satellite Radio (DSR) is already operational in Europe, while digital satellite television still awaits its improvement.⁸ The digital broadcast can be fed into cable networks.

Digital technology has also developed the methods to encrypt or to lock down the digital information and prevent any unauthorized activity or use. For example, an anti-copying device can be inserted into the digital software and hardware with the effect of inhibiting the copying of encoded recordings or preventing the copying of the copies. This so-called Serial Copy Management System (SCMS) is made obligatory for the industry in the United States by copyright legislation.⁹

The encrypting of the television programs is already a practice in the analogue field and can also be introduced in the digital broadcasting ("pay-TV," "free services") that wish to limit public access to their programs and pay-per-view systems.¹⁰

The Council of Europe has recommended that its member states protect the encrypted television services legally by enacting sanctions against the unauthorized manufacturing, importation, distribution, advertisement and possession of decoding devices.¹¹

Tracking and registration

At the same time, the innovations based on the digital technology have opened up a new way of tracking and registration of the uses and identification of works, performances, recordings used, registration of the number of uses, and of users. Printed copyrighted works could contain on each page of the work identification data, copy machines could also read, store and process the printed identification data of a copyrighted work. The copy machines could be connected to the hardware of royalty collecting societies.¹² The same system could work, mutatis mutandis, for audio and audiovisual works as well. "Smart cards" could allow the making of a certain number of copies; by means of "interactive smart cards" the works, performances and recordings that are used also can be identified and used for distribution of royalties by collective administration organizations.

Finally, broadcasting organizations can store the data of their broadcast works digitally, process them (sum up, print out at the end of each day) and send them to the collective administration organizations.

The introduction of such "tracking," controlling systems presupposes the statutory introduction of a legal obligation to apply them or the existence of a contractual system.

Changes in the pattern of use

4. The factual background should include, we think, certain uncontested or probable consequences of the growing application of digital technology in the dissemination of works. We refer to two of them only: firstly, copyright laws have been essentially intended to govern market uses. Now, works, performances, recordings and broadcasts can be accessed easily by using widespread copying technologies and telecommunication networks, but without paying for hard copies or tickets to any performance. The present market mechanism of copyright fails to cover the spreading "private" mass uses except rather insufficiently.¹³

Secondly, the difference between the exploitation of the works in material form and in immaterial form is fading; the importance of the use of works in immaterial form is growing. The producers of recordings are threatened with losing control of the dissemination of copies of recordings. The desire of the public, rooted in basic human instincts, to possess material copies of favorite works and performances, however, prevails.¹⁴

III. Legal Aspects

General problems

5. In spite of this subtitle, we have to start with a question which is of a more practical than legal nature: is it possible and at all worthwhile to hinder the use of works by technical means?

Many observers consider this attempt a lost battle: "The history of arms control and the success of computer pirates teach us that there is always a technological fix for a technological fix."¹⁵ Others think that "we certainly have the technology to encrypt or lock down digital information" but, later on, the same source admits also that the illegal copying of software has not stopped.¹⁶

We are tempted to make the assumption that the effect of the spoiler systems would be different on the public and on the pirates. The first may be deterred from illegal use, the second not. The production of the decoding equipment is a question of money and determination only.¹⁷ Therefore, technology itself cannot be the complete answer to the problems produced by technology.

6. When we put aside the problem of "to use or not to use" the technical protective means--what we are compelled to do as the obligatory use of the technical control is a reality in some countries already¹⁸--we immediately encounter a more general problem. What would be the impact of the obligatory coding of works (as a de facto new formal requirement of the protection) and the invasion of technology into the presentation and dissemination of works on the classical notion of authors' rights? A pessimistic answer--from the continental European point of view--would be that this process shifts the authors' rights to the copyright; loosens the personal links of the author to his work; endangers the initial author status.

Certain experts even see an indisputable sign of a general decline of copyright in the use of technical means of protection: "The nervous breakdown of copyright protection is now an open scandal." "In this environment, laws written to protect books and phonograph records and broadcasts, the products of the past, are getting harder and harder to apply."¹⁹ This assessment is hard to refute off-hand. The "crisis of copyright," however, has been evoked for many decades, blaming technical development especially, yet copyright has survived. This time not the extended interpretation of rights or the recognition of new categories of works but the technologies themselves may prove to be the way out. The next five-ten years should give us a definite answer.

Technical control and the consumer interests

7.1. One of the basic legal questions of the use of technical means for the protection and control of authors' rights and neighboring rights is a possible conflict of such measures with established rights of the users and the public.

Putting technical obstacles into the way of an owner's using legitimately obtained copies may again raise the problem of a conflict between the right of ownership and copyright. The basis of the solution is, of course, the legal fact that the copy on the one hand, and the work (performance) carried by it on the other, are two different categories with separate rights attaching to them.²⁰ This explanation, admittedly, does not rule out the practical conflicts of interest in a situation where the work-carrier is, at the same time, a useful consumer item (as in the case of architectural works). With sound and audiovisual carriers this is not the case.

7.2. We have more difficulties in finding our answers where the applicable technical means could possibly restrict the rights of consumers established under the copyright system itself. The free uses allowed by copyright legislation have a social function. This function, the interest of certain groups of the public or of the society in general (in education, research, topical information, etc.), is stronger than the exclusive rights of the author unless the free use will unreasonably prejudice the legitimate interests of the author and conflict with a normal exploitation of the works concerned. Articles 9, 10, 10bis and 11 of the Berne Convention establish a fine balance between these interests. The development of technology now upsets that balance by making out of small exceptions big ones with far-reaching consequences. Does the use of technical means for protection and control mean an absolute abolishment of all exceptions to the exclusive rights of authors, performers, producers, broadcasters? This seems unjust. Is it possible to find any flexible solutions? And if not, is the de facto abolishment of the institution of the "free use" compatible with the provisions of the Berne Convention?

One part of the relevant provisions of the Berne Convention authorizes but does not compel the member states to allow certain exceptions to the exclusive rights of the authors. Such are: Article 9(2) (reproduction), Article 10(2) (certain uses for educational purposes), Article 10bis(1) (certain use of actual reports, articles, broadcasts), Article 10bis(2) (reporting on current events), Article 11bis(3) (ephemeral fixation for broadcasting purposes). In these cases, the national legislation may--with due regard to its international commitments--introduce technical means also influencing, even excluding these free use cases.

The technical restrictions in national legislation and practice should be brought into harmony with the public consumer interests. However, in this field, an even more radical approach can also be defended. We could say that the "free use rules" are to be applied only where the public has already had a legitimate access to the work (production, performance). The way and method of the publication and distribution of the work can be determined by the investing intermediary person (publisher, user) and the "free use rights" come to life only afterwards. In this case, the statutory rules on the obligatory use of certain technical means and the prohibition of the circumvention of these rules can be regarded as a selective state measure to protect industrial, market investments.

Another part of the "free use" provisions of the Berne Convention compels member states to allow exceptions to the exclusive rights: Article 10(1) on free quotations is a kind of "negative minimum right," a conventional restriction of the exclusive rights. Encroaching upon this "free use" by the obligatory use of technical means could be in contradiction to the Berne Convention. However, coding and encrypting does not preclude "quotation" but only the reception and the digital copying of the work for that (quotation) purpose.

7.3. A slightly different problem is the technical exclusion or restriction of free access, the free copying and use of the public domain (non-protected) works. The obligatory use and acceptance of such technical restrictions might be understood as an attempt upon the principle of the "freedom of reception," freedom of the free flow of information. Such principles are included in the laws of several countries or at least generally accepted. However, the decoding of encrypted programs or the limitless copying of digital recordings would prejudice the interests of the authors, performers, producers and broadcasters and endanger the viability of the cultural undertakings.²¹ Consequently, this practice could lead to the limitation of freedom of access to information and to works. The choice in works and information could be restricted. Further on, the encryption of a whole TV program including public domain works is not more prejudicial to the interests of the viewers than the monthly radio and TV subscription fee which is also a lump sum covering the totality of the broadcast programs.

8. The present technology would allow, without any doubt, the prevention of any copying of the sound and audiovisual recordings (as is the case with the "text mode" of the DCC). Compared to those possibilities, the Serial Copy Management System offers a viable compromise--in the field of audio recording--between the interests of the copyright owners and the consumers. The possibilities of making copies of the original (but not making copies of the copies) fulfills the needs of the genuine private use.

This leads us to the question, raised in the earlier legal literature: can the SCMS be introduced where the home taping royalty is in practice already and especially for the analogue copying process also? Our answer is affirmative. The rationale of the SCMS is to hinder and exclude the pirate copying activity which produces for the black market. The home taping royalty covers the mass private copying and tries to compensate for material losses resulting from this practice. Strictly speaking, this mass private copying is not a "free use" anymore, but, in fact, a use against a financial consideration, under legal licence.

A new type of infringement

9. The use of technical means to protect and control works, productions and performances can only be effective if not only the circumvention of these measures by using illicit decoders is forbidden but also the manufacture, importation, distribution and possession of such devices which are designed to enable an unauthorized, unpaid access to the protected intellectual goods. Such legislation may, nevertheless, run into certain difficulties and also change certain well established concepts.

First of all, the restriction of the free distribution of goods may be contrary to certain basic legal principles in the geographical and political area concerned (e.g., in the European Community). Secondly, the prohibition of the private possession of certain goods may also be unacceptable in some countries' systems of law (are decoders as dangerous as guns or drugs?) or at least not enforceable. Even more interesting are the following questions:

- What kind of rights are infringed here?
- Who is the infringer of the protected intellectual property rights?
- How does this influence the basic concepts of copyright?

The illicit use of decoders, the breaking of copy codes means the infringement of the exclusive right of authorization relating to the broadcasting or reproduction right; thus, it may be a copyright infringement. The manufacture, importation, distribution or possession (in commercial quantities) of decoders designed for the illicit use may be an act of complicity leading to the same infringement indirectly; but it is not directly an unauthorized, restricted act under copyright. Article 16 of the Berne Convention speaks about "the seizure of infringing copies of a work." "Infringing copies" are obviously the results of an unauthorized use.

The infringement formulated above may, therefore, be termed either as a protection of a new, sui generis right to a special property (namely the decoders). Or, if the related provisions are included in the public law (for instance telecommunication law), they constitute a special contravention. We think, however, that these special rules belong to the body of the copyright legislation, as rules protecting the exclusive rights of the authors and of the owners of the neighboring rights in an indirect manner.

This means, of course, the extension of the traditional notion of copyright infringement which should be reflected in international and national copyright legislation. Under traditional copyright law, the infringer is the illegal user of the work (performance, production, broadcast program). The "use" means the "restricted acts" enumerated in the Berne Convention and in certain national legislation or, according to a more general approach followed in other countries, the economic exploitation or the process of communication of the work to the public.²² The above extension of "infringement" means therefore that we extend the notion of the infringer to persons who are contributing to the infringement, who are enabling others to use the works (performances etc.) illicitly. This would amount to the introduction of the criminal law notion of "complicity" into copyright law. Finally, this would lead, forcibly, to a more detailed regulation of enforcement in international copyright instruments.

10. Perhaps surprisingly, not only the use of the technical means for the protection of intellectual properties but also the non-use of the available technology make a re-assessment of the copyright situation necessary. The technique of encrypting broadcasts and the protective coding of computer programs are developing rapidly. There are already encrypted and non-encrypted broadcast programs, technically protected and non-protected computer programs on the market. The question is whether unauthorized third persons (for instance, cable operators or software users) can interpret the non-encryption as an implied, tacit consent to the subsequent use (retransmission, fixation, reproduction, "running," etc.) of the programs.

We are against such an extensive interpretation. The general rules of copyright should apply in this case also. The "copyright use" (exploitation, distribution, retransmission, reproduction) always presupposes an explicit consent of the rightsowner. In many legislations this must be done even in written form. An unlocked bicycle in front of a store is not offered for taking away freely either.

11. However, the non-use of technical protective measures may have--under certain circumstances--consequences for the copyright responsibility of the original user/distributor itself. The broadcaster, for instance, who could prevent the reception of its programs in non-licensed territories by using spoiler systems, encryption, etc., but does not do so, may be liable for the infringement of the authors' and neighboring rights existing in that territory. This is certainly so if the distinctive technical elements of the broadcast indicate in advance that average households of the non-licensed territory would be able to receive the program with no more than the usual average reception costs.

The above statement may have far-reaching consequences in the case of digital broadcasting and of big database networks which cover large areas of several countries. The non-use of the available protective technical means is a proof of an intention to distribute the program also in the non-licensed foreign territories (or at least the knowing acceptance of the consequences).²³ This could necessitate a reconsideration of the so-called Bogsch Theory in the international copyright law of the satellite broadcasting. The European Community is just about to abandon this theory in favor of a somewhat nuanced "emission theory."²⁴

IV. Digital technology--collective administration of rights

Extension of scope

12. The effects of the spread of digital technology in the process of distribution of works and in the administration of authors' rights are controversial. Digital storing, transmission, copying and broadcasting of works strengthen the tendency of the mass "private" character of today's use of works. The control, administration and enforcement of the copyright beyond the thresholds of private households make individual licensing, which is the basic, adequate form of the exercise of the exclusive rights, less and less workable. We can nearly speak of an eclipse of the individual licensing. This necessitates the enlargement and extension of collective administration.

However, collectivism in its extreme forms--such as non-voluntary and statutory licences--has its own dangers. The authors and other rightsowners may get into a less advantageous financial situation, and, especially, the effects of moral rights as a force of guarantee weaken. The evolution of digital technology necessitates, therefore, a further strengthening of the legal guarantees--towards authors and users--of collective administration.

"Dematerialization" of recordings

The probable "dematerialization" of sound recordings is an evident example of this development. As the selling and rental of "material" copies of works (sound recordings, videograms, books) gives way to the digital transmission and dissemination of the works in immaterial form (in a few years? in one or two decades?), the producers of the copies would seek to have exclusive rights (also for the secondary uses) similar to those of the authors. These rights could not be exercised individually, which would lead to the extension of the collective administration to new territories. This again would need a harmonization in the--collective--exercise of the rights of different groups of rightsowners regarding the same uses.

At this point, we wish to mention the possible restructuring of the priorities of the collective administration organizations as a result of digitalization. The fall of the importance of the reproduction of copies (for instance, sound recordings) will put into the foreground the licensing of fixations made for broadcasting and for databases.

Licensing

13. The collective licensing schemes for music will also undergo a change due to the wide application of digital technology. The present and medium-term licensing in the mechanical reproduction field is on a price/copy basis, depending on the playing time of the copy.²⁵ However, the sound carriers are reaching a higher and higher rate of data compression which would lead to an increase in the music capacity of a CD to many hours. In the new situation, the only reasonable basis for the royalties could be the duration of the music. This applies also for the music to be purchased and downloaded by telephone and cable systems.

The above new principle could be put into practice immediately in the case of licensing the Interactive CDs or so-called interactive multimedia titles. In these compact discs, the text, spoken word, music and animated cartoon are fixed as indexed items much the same as in a computer database. The program is run on the computer in much the same way as a computer game based on user interaction. The program offers the user a choice of options, each of which usually leads on to further options. It is conceivable that some options are never called upon. The "actual total playing time" of the disc does not make sense. Music can play a major or a very limited part in the product (background music, extract of musical works as examples, etc.). As a corresponding new licensing concept, the following ideas are discussed within BIEM circles. The recorded music could be isolated from the rest of the product and it can be ensured that an equitable royalty is paid for the amount of music used. This could be achieved by first weighing the music featured against the background, summing the individual playing times of the weighed music and charging a standard rate per unit of time. This rate would need to be somehow related to general price increases.

Distribution

14. We spoke about the rise of collective administration as an effect of digitalization. This new technology opens up, at the same time, new possibilities for eliminating some deficiencies of this system. Namely, the collected royalties can be attributed to the works and productions (performances) actually used ever more closely than before.

One of the greatest problems of collective administration of the rights in secondary uses (home taping, reprography, cable retransmission) is how to distribute the royalties. Financial rewards should flow to the actual source of the works. This principle is generally accepted. As the relevant WIPO study and the Committee of the Governmental Experts stated: "The basic principle cannot be anything else but that the money collected by collective administration organizations should be distributed to those individual owners of rights whose rights have been used."²⁶

The difficulties of implementing this principle have repercussions on the applicability of the national treatment principle in the case of home taping royalties. As a matter of fact, the copying activity concerns the international audio and video repertory everywhere. The distribution, however, is still often based on data mainly concerning the national repertory (originating from local television programs, from data of licensing of local recording production). The reasons are technical, as the program data of foreign terrestrial and satellite broadcast programs and of foreign audiovisual carriers are not available. The coding--digital identification of works and the digital tracking of the acts of uses--offers a splendid solution of these problems.²⁷ The uniform coding of works needs a financial investment. The publishing industry could be compelled to make this investment by the legislation and/or by the general (blanket) licensing agreements. A theoretical basis of such a legislative measure might be the new interpretation of the "right of paternity" of the authors. Nowadays, the name of the author should be mentioned on the work also digitally, not only by letters.

V. Summary

15. The use of technical means of protection and control will not deter the pirates definitely. Digital technology will not bring the total abolishment of the free use system in copyright, but may influence its practical implementation and may also necessitate some changes in national legislation. The international conventional rules on free use are thereby not affected.

The obligatory coding of works may revive formality in the system of copyright law.

The encryption of whole programs including public domain works is not prejudicial to the interest of the public in the long run.

The SCMS offers a viable compromise between the interests of the copyright owners and those of the consumers. It can be introduced also where home taping royalties are already in practice and for the analog copying process also.

The prohibition of the manufacture, importation, distribution or possession of decoders designed for the illicit use of works bursts the present boundaries of "copyright infringements" in international copyright law and in many national laws. The notion of the "user" is extended.

The non-application of the available technical means of protection can also have different legal consequences. It cannot be interpreted as a tacit consent to secondary uses in general, but it may be considered as a basis of legal responsibility for satellite broadcasting across borders.

The use of digital technology in the copyright "industry" will enhance the importance and the efficiency of the collective administration of authors' rights and neighboring rights.

Digital technology will restructure the priorities in the licensing practice of the authors' rights societies and change some methods of licensing, especially in the musical field. This technology will also promote the closer application of the national treatment principle in the distribution of royalties.

NOTES

- 1 See the preparatory documents and the papers presented to Panel III of this Symposium.
- 2 The USA sound recording industry demanded in vain the broadcasting organizations to identify the broadcast recordings by using a digital code. The legislative action failed. Gronow P., Lannegren G., Maren L., *Les nouveaux techniques dans le secteur de la radiodiffusion sonore et leur influence sur les moyens de communication de masse, Conseil de l'Europe, CDMM (92) 18 def., p. 29.*
- 3 47 U.S.C. par. 633 (supp. 185); law of July 10, 1987.
- 4 Chaubeau A., *The unlawful Decoding of Encrypted Television Signals and the Protection of Authors and Producers of Audiovisual Works, Copyright, 1990, p. 371.*
- 5 For more details, see the preparatory documents and the papers presented to Panels I and II of this Symposium.
- 6 Gronow P., Lannegren G., Maren L., *op.cit., p. 5, note 2.*
- 7 See note 2, p. 6.
- 8 See note 2, p. 7.
- 9 Audio Home Recording Act of 1992, Chapter 10 of Title 17 United States Code.
- 10 Chaubeau A., *op.cit., p. 367, note 4.*
- 11 Recommendation No. R (91) 14 of October 1, 1991, CD-MM (91) 4.
- 12 Kitagawa Z., *Copyright Clearance or Copy Sale? A Thought on the Problem of "Mass Right", UFITA, 117/1991, p. 65.*
- 13 Geller Paul Edward, *Reprography and other processes of mass use, RIDA, 153/1992, p. 11.*
- 14 Uchtenhagen U., *Neue technische Verfahren zum Festhalten und Verbreiten von Werken der Literatur und Kunst, UFITA, 114/1990, p. 25.*
- 15 Cleveland H., *Speculations on the Global Information Society, UFITA 105/1987, p. 89.*
- 16 Barton D., *Creation and Technology in a New World, lecture delivered at the CISAC Congress, Maastricht, October 19, 1992, p. 8.*
- 17 Chaubeau A. supplies us perfect examples of this competition of coding and encoding technologies in his *op. cit., p. 368, note 4.*
- 18 USA "... home taping law ...". See also the Recommendation No. R (91) 14 of the Council of Europe on the legal protection of encrypted television services.

- 19 Cleveland H., *op. cit.*, p. 89, note 15.
- 20 USA Copyright Act of 1976, par. 202; German Copyright Act of 1965, par. 44(1); Hungarian Copyright Act of 1969, par. 28(3).
- 21 Darics G., A technical solution to private copying: the case of Digital Audio Tape, *EIPR* (1987) 6, p. 155.
- 22 E.g., par. 10(1) of the Implementing Decree No. 9/1969 (XII.29) MM of the Hungarian Copyright Act No. III of 1969.
- 23 See the ten years old, still relevant and rich argumentation of Katzenberger P., *Urheberrechtsfragen der elektronischen Textkommunikation*, *GRUR Int.* 1983, from p. 917.
- 24 Draft Council Directive on the coordination of certain rules concerning copyright and neighboring rights applicable to satellite broadcasting and cable retransmission, COM (91) 276 final, SYN 358.
- 25 See BIEM-IFPI Standard Contract for the Phonographic Industry, concluded for the period 1.7.1992-1996.
- 26 GC/GA/4, March 19-23, 1990.
- 27 Tournier J-L., Authors' rights and new modes of exploitation, lecture delivered at the 38th Congress of CISAC, Liège/Maastricht, October 18-24, 1992, AG/92/1718, p. 8.

**INTERNATIONAL IDENTIFICATION OF COMPUTER PROGRAMS
AND
INFORMATION TECHNOLOGY PRODUCTS**

by

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Introduction

Printing was the first modern media dedicated to forwarding information. Information technology is more of a data processing tool than a real media.

Today, with the emergence of digitalized data, we are faced with the problem of the same medium carrying both data and data processing tools. This combination is new to us.

The need is getting bigger for an authentication system that would enable the author as well as the user not to lose track of their product: considering the emergence of new distribution systems such as shareware or freeware, remote loading or pay per view, especially for multimedia creations, fewer and fewer controls can be operated on related user licenses.

The ever increasing load (data compression) and circulation speed of digitalized software and data implies the risk to see this flow getting out of hand, and leaving the rights thereon diluted and left with neither source nor destination.

The Agency for Protection of Programs (hereinafter "APP") undertook a broad research which consists of an extensive compilation of the current situation regarding software protection and deposits in the largest number of countries.

This was first thought out a few years ago, and was launched at the time as the "INTERDEPOSIT SOFTWARE" project.

Its results are expected to be put in practice within a few years, and forecasted for a complete achievement 10 years from now.

The APP was recently asked by the WIPO to apply its study on codification and authentication to software and other digitalized works.

APP presentation

The APP, located in Paris 19^e, 119, rue de Flandre, is a non-profit association set up in 1982 and registered under the French law of 1901. It gathers computer program creators and professionals of the information technology industry. Its registered office is in Paris. It has contacts in New York, Montreal, Hamburg, Brussels, Milan, and its Geneva office is now opening.

The APP frequently acts as adviser to various expert committees of the French Parliament and government. It is also an active and regular partner of international organizations such as OECD, UNESCO, the European Council, the EEC and, of course, WIPO.

Its members include governmental and public bodies, research and training centers, software developers, distributors, independent authors as well as private users. Its national network of associates comprises data processing experts and lawyers in all French Courts of Appeal.

The APP leads actions in Europe for the promotion of legal, ethical and practical rules intended to harmonize and establish intellectual property rights on information works.

In that respect, its missions consist in promoting and defending creators' interests, on both individual and collective aspects, organizing and leading conferences and workshops.

The services rendered to members include, among other things:

- screening contracts submitted by its members for critical commentary (although the APP does not give legal advice, the extensive experience of its staff can nonetheless help in pointing out legal issues);

- informing the public by means of press articles, radio and television programs, conventions and seminars.

Finally, its preventive actions consist of:

- establishing evidence of the author's ownership of the program by software registration and deposit;
- setting up of access right to the source code;
- ascertaining the validity of a deposit ("Secure Deposit Check");
- organizing contractual license controls;
- providing arbitration and conciliation boards;
- proposing a durability diagnosis ("diagnostic de pérennité").

1. Software registration and deposit

This very reliable procedure consists of establishing a date of creation which evidences the existence of the deposited product. It also gives an opportunity, based on information provided by the developer, to review all known property rights and to qualify the work as either collective or jointly owned product, or as an adaptation of a preexisting work.

2. Escrowed access to the source code

In case of default by the developer, the user may perpetuate the use of its information system by obtaining a copy of the source code by way of a specific procedure whereby the APP acts as an escrow agent. This same service can be achieved by a three-party contract setting forth the events triggering the delivery of the source code, such as when the developer enters into liquidation whether voluntary or compulsory, has a receiver or administrator appointed, or fails to provide the contractually agreed services, etc. This procedure is also useful when local law makes it mandatory for a legal entity to guarantee access to the source code of an information system.

3. Secure deposit: supervised compiling of the source code

This procedure requires the presence of both the owner and the user at a test for compilation of the source code. Its purpose is to verify that the deposited source code corresponds to the object code attributed to the user, with all necessary upgrades, and that they are not defective.

4. Software diagnostic: analysis of maintainability

The APP issues a certificate which is the outcome of a very specific study conducted by APP technicians to evaluate the maintainability of the deposited software. This is to determine what measures a third party professional would have to undertake for the long term maintenance of the software, if it were compelled to take such a step due to the developer's default.

5. Voluntary license audit

Members can contractually assign to the APP the task of verifying that all necessary licenses have been duly obtained for the software. In this case, the APP sends a group of technicians instructed to conduct an audit of the documentation relative to the software on agreed terms with the relevant contracting party. Sample verifications are conducted to determine whether the software is used in accordance with the related licenses. The mission encompasses the drafting of a report pointing out discrepancies so determined. The user undertakes to inform its employees of the content and consequences of current legislation protecting developers' rights--and licensed users' rights as well--and to take steps to obtain any missing license.

6. Arbitration and conciliation boards

When a dispute involving the ownership of a computer program arises between two or more software developers who are source code depositors registered with the APP, the parties agree to submit their case to an arbitration tribunal set up according to the APP's arbitration rules. This procedure has always proven effective to provide settlement between licensors and users, sellers and purchasers, employees and employers, or between two developers claiming ownership on the same software.

7. Legal actions

Pursuant to Article 331-1(2) of the new French Intellectual Property Code (Code de la Propriété Intellectuelle, enacted July 1st, 1992), the APP has legal standing, as an association for the promotion and defence of professional interests, to enter into legal action, to defend developers' interests, both civil and penal. By dint of its commitment to developers' interests, the APP has been and will be a force in the marketplace, taking numerous of actions which should considerably diminish piracy acts, either accidental or deliberate, and remove incentive for such with employees and competitors.

The APP can also, upon request, take any legal action on behalf of its members within the limits of local legislation.

The APP's results to date

The APP has now over 4,000 members. The APP has filed more than 500 pleadings or statements in connection with legal proceedings for the seizure of counterfeit software not only in France, but also in other European countries which, like France, lack a procedure for the deposit and identification of copies of source code. More than 100 court decisions have recognized the standing of the APP. Such decisions include 15 in criminal courts, 5 of them after granting APP's motion for summary judgement.

For 10 years, the APP's initiative has proven successful in protecting software. The APP leads the way to the future in management of rights in information technology. The APP now endeavours to set up solutions and anticipate needs with respect to the "all digital" environment for information technology, and short-lived physical embodiment of data. This is the reason why the APP has undertaken the task of establishing an **international identification system**, in conjunction with **INTERDEPOSIT Network**, of which the APP is a founding member.

The need for an international identification system

This presentation focuses on material stored and transmitted in digital form, with or without physical embodiment.

Nowadays, it is technically possible to generate perfect copies and therefore to easily create derivative works.

Digital technology is an adaptable tool that allows for production of high quality products, but risks for right holders are consequently high, and such opportunity to reproduce the work content generates problems, considering the quality of the resulting copies (i.e., in the audio-visual area, quality of digitalized copies is such that the generation of one copy cannot be ascertained).

When quality and ease are so combined, the door is wide open for abusive use, illegal reproduction and piracy.

These problems of abusive use, illegal reproduction and piracy are addressed below, with no intention to be exhaustive.

1. Dualistic works

Programs are successions of instructions given to a machine (computer or microprocessor) that bring about physical or logical actions.

Digitally stored information, just as computer programs, can seldom be apprehended by humans without the help of a machine, namely a computer.

They can be perceived through their internal aspect as computer programs, as well as through their external aspect as a visual and sonic expression. In that respect, digital technology works can be perceived at two different levels:

- The user's level: the user perceives the external expression of the work, which can be paper edition, succession of different screens, sounds or mechanical behaviour organized according to a preestablished scenario.

- The programmer's level: the work was conceived as a program whose structure depends on the method used and therefore can be totally different from one product to another (regular software program or chips), for the same apparent result.

Programs and digitalized works do not appear under the same aspect to the reader and to the writer.

2. Ownership

Any digitalized material, and any material available in a more conventional embodiment, encompasses elements of intellectual property created by and belonging to creators, not always connected to each other. Therefore the user cannot easily verify who is the genuine owner of the rights that are to be transferred to him, unless he can obtain copy of ownership titles.

Likewise, the acquirer of a software is quite unable to identify the succession of transfers undergone by the product, unless the transferor can produce all transfer deeds, which implies that the transferor is actually in possession of those.

User might also need information from the owner in order to integrate a program or obtain its interoperability, when such information is not readily available and when he cannot or will not recourse to decompilation. He must, therefore, identify the rightsowners from whom he has to obtain the related authorization. Such search is today hindered or even impossible.

From a general standpoint, identification of rightsowners is extremely delicate, even more so when several types of authors can collaborate in a different and indissociable manner, i.e., multimedia or other complex creations. The same difficulties can also be encountered in the area of freeware and shareware (see "IDENTIFICATION AND TRANSFERS CHAIN").

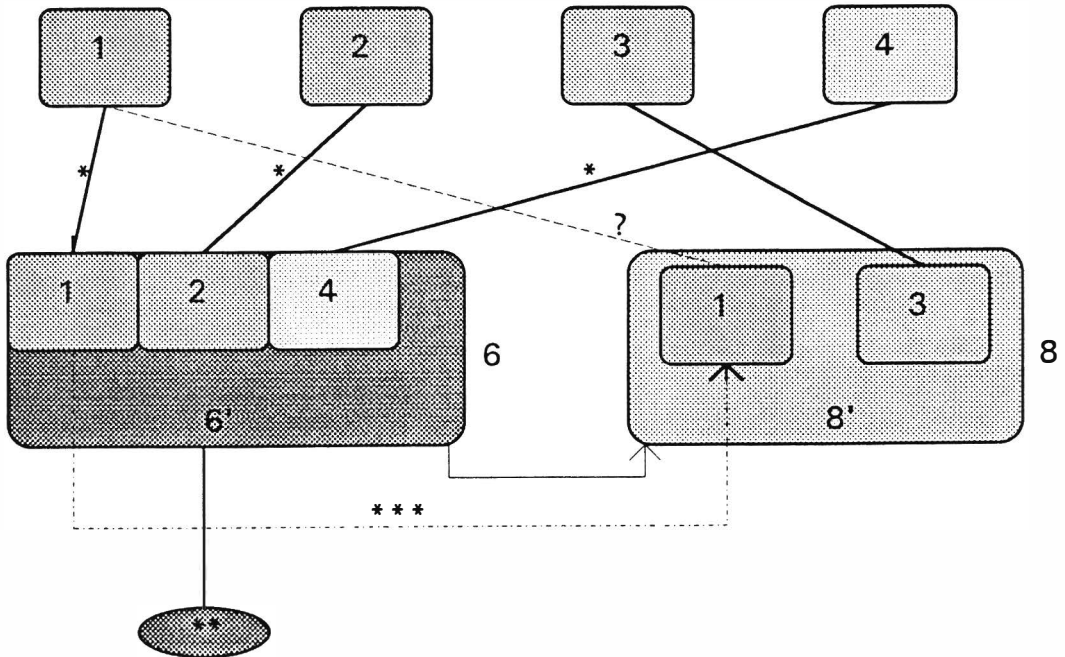
3. Access to the source code

A user may feel the need to obtain access to the source code of the program in use in its business. He might for example need to control the durability of the information treatment technologies that structure the business and shall first seek the consent of the rightsowner.

Such access should be offered together with access to the preliminary work, in order to allow maintenance of the system if the seller ceases to trade or disappears one way or another and, therefore, produce enhancement and modification of the source code.

However, once access is obtained, another difficulty may come out: the discrepancy between the source and the object codes or a source defective in content.

IDENTIFICATION AND TRANSFERS CHAIN



Work 6:

The author of 6 incorporated 1, 2 and 4 as is in its new work.

(* upstream ID number)

The ID number helped identifying the rightsowner, as well as type (autonome, adaptation or composite) of each incorporated work.

The ID number also indicates the nature and scope of rights that author of 6 will be able to transfer on 1, 2 and 4. (**downstream ID number)

Work 8:

The author of 8 incorporated 3 as is, and would like to use 1, after alteration, in 8.

The author of 8 only knows 1 only as component of 6.

The author of 6 may transfer rights on its work, inside the limits of the rights received for each of its components.

The ID number attributed to 1 reveals the rightsowner(s) on 1, including fusion of 1 into 8.(***)

4. Applicable law

Today, authors and users have no other choice than to deposit their property in each country where such procedure is available and where the software shall be used, in order to curtail all uncertainty as to applicable law in relation to a potential litigation.

One should bear in mind that creation is primarily meant for use.

Hindering that use one way or another would be deliberately against what precisely motivated creation of the works as well as its physical embodiment. Considering that, the purpose of the project is in no way to bar access to digitalized information technology works but to supervise it.

The problem set forth hereby is one over the use of those works.

It becomes urgent to establish a system which would enable actors to supervise such use, without hindering it.

First steps to the international identification system

There exists no international escrowing or registration system for literary works such as those set forth for patents and trade marks.

Some interesting and valuable projects were put in practice such as ISSN, ISBN and, more recently, ISRC.

In the intellectual property domain, international law is well established but is unfortunately not uniform: not all countries have similar copyright laws, nor do they have recourse to the same procedures for registration or deposit of copyrighted works. Furthermore, when such procedures exist and are put in practice, they do not necessarily carry the same legal effects or sanctions. Sometimes, deposit is a prerequisite for protection and/or legal action.

The construction of an international identification system supposes the centralization with a recorded entity, and a uniform procedure.

A deposit codified according to a unique (uniform) nomenclature allows for the creation of a unique authentication document setting forth claims on ownership rights, with reference to the applicable law.

Such project could help prevent piracy by supplementing the existing legal protections for copyrights and trade secrets as well as provide an acceptable solution to the problems addressed above.

Deposit would be the cornerstone of the system as a unique procedure which would considerably curtail paperwork and other procedures to the depositor.

It would also provide the rightsovers with a valid protection in several countries at a reasonable cost, as the deposit would be thereby validated throughout the world.

Such deposit will be available to authors or other entitled (eligible) parties in countries where no such register exists or where it is not functional.

Depositaries shall attribute to all deposited works an **international identification number** containing information as to the type of deposit and relevant other information regarding relevant operating systems, minimum hardware configurations and other data useful to users and developers. They shall have the depositor fill in a **claim statement** setting forth identification and claim of rights.

Such procedures will help **identification by the public**, by using the information encoded in the identification number, e.g., persons or entities claiming proprietary rights in the software, as well as the date of first deposit and last update, and establishing throughout the world a procedure allowing **proof of the date of creation and content**.

It is, for the author, a reliable means of attributing a certain date to his creation (software package) as it publicizes the rights of the owners and the instruments and contracts that transfer or alter the ownership.

It is, for the user or the information provider, a means of identifying the rightsowners and to obtain necessary information on interoperability.

It also provides a means to check that a party actually has the rights that are meant to be transferred.

The potential safety brought by the system should be considerable. The identification number will bear all necessary information and constitute a guarantee as to the identity and the extent of the rights owned on the registered software.

The titles' succession being easily identified this way, the counterfeiters will not be able to transfer rights to which they are not entitled and which appear clearly under a different person's name.

As an important secondary benefit of registration or deposit, it is expected that business will become smoother, owing to easier proof of ownership, and as a direct consequence, that the confidence in the value of the object of deposit will increase.

The verification of the identification number coherence is also a sine qua non condition to a broader procedure tending to ascertain the durability of an integrated information system. This means access to the source code and preliminary work on the program, in order to perform necessary modifications in case of default of the licensor.

Finally, one should bear in mind the impact of such trustworthiness on international commercial transactions.

The international deposit therefore comes as a complement of existing registers, national or international.

The APP's task, as assigned by the WIPO, consists of the following seven stages:

I. Comprehensive survey

The APP has already undertaken to gather information about the various organizations which offer deposit services for software and data bases.

This is all the most a vast project as not all the legislations are compatible and a quite large number of countries do not have any deposit center, either public or private.

II. Comparative study and report

Collected information will be processed and presented in a comprehensive report prefiguring the codification schedule.

III. Codification schedule

The codification schedule, developed by a WIPO expert committee, will establish a list of data that will, if put in a coherent order, result in the identification serial number encoding all necessary information for reconstruction of the chain of transfers attached to the product.

IV. Identification of experts and actors

Contacts with editors, users and information technology industry members shall be made for preconstitution of a list of accredited representatives.

V. Meeting of experts and actors

Validation of the codification schedule.

VI. Experimental platform setup

A prerequisite to this setup is the design of procedures and forms: procedure establishing evidence of ownership on the work and access to the source code, drafting of the codification instruction manual, I.D. document setting forth the work's particularities, deposit certificate, etc. The objective is to organize the agencies' commitment around a code of professional ethics, set forth as a set of regulations approved by the WIPO.

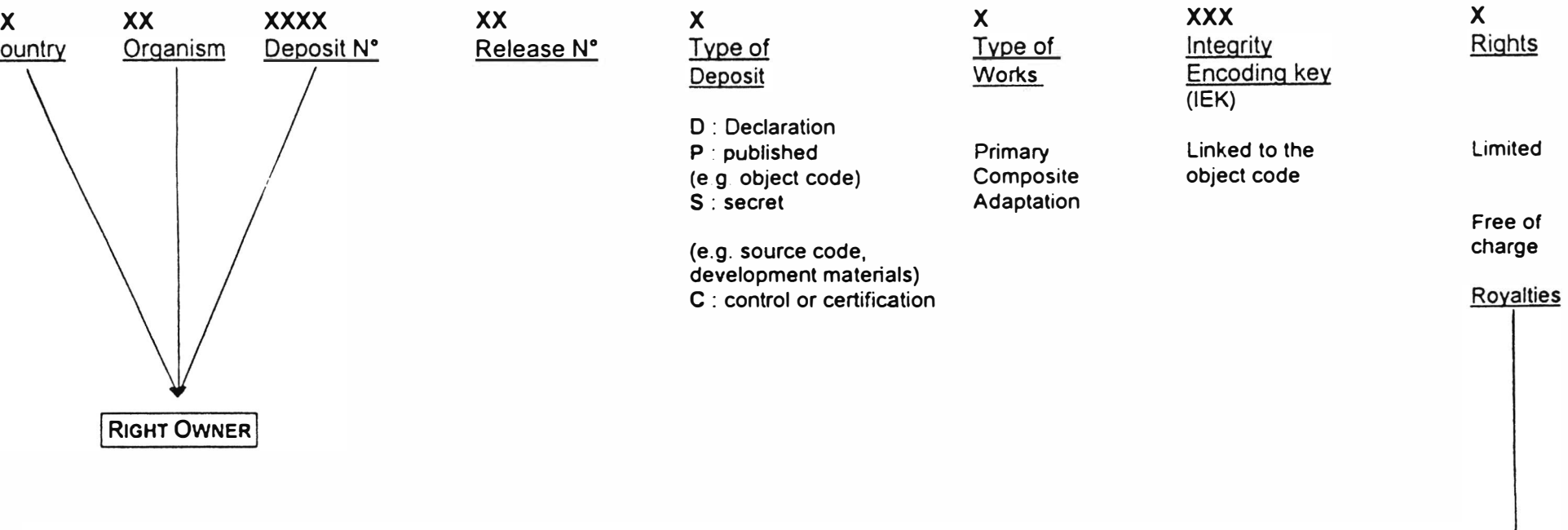
VII. Generalization

Considering the results of the performances of the experimental platform, and the forecasted technology evolutions and future developments announced for the beginning of the 21st century, what is now a simple, though thorough study is meant to materialize within a few years into a worldwide deposit interconnection linked to a reliable identification system.

The mechanism tends to the creation of an international network of franchised agencies, as well as it serves the cause of promoting broad public availability of new innovative products.

(Enclosed as Appendixes are the transparents presented at the Symposium as an illustration of the numbering system.)

IDENTIFICATION NUMBER



D : Declaration
P : published
(e.g. object code)
S : secret

(e.g. source code,
development materials)
C : control or certification

Primary
Composite
Adaptation

Linked to the
object code

Limited

Free of charge

Royalties

RIGHT OWNER

→ XXX Collecting Entity

XX Right - Type 1

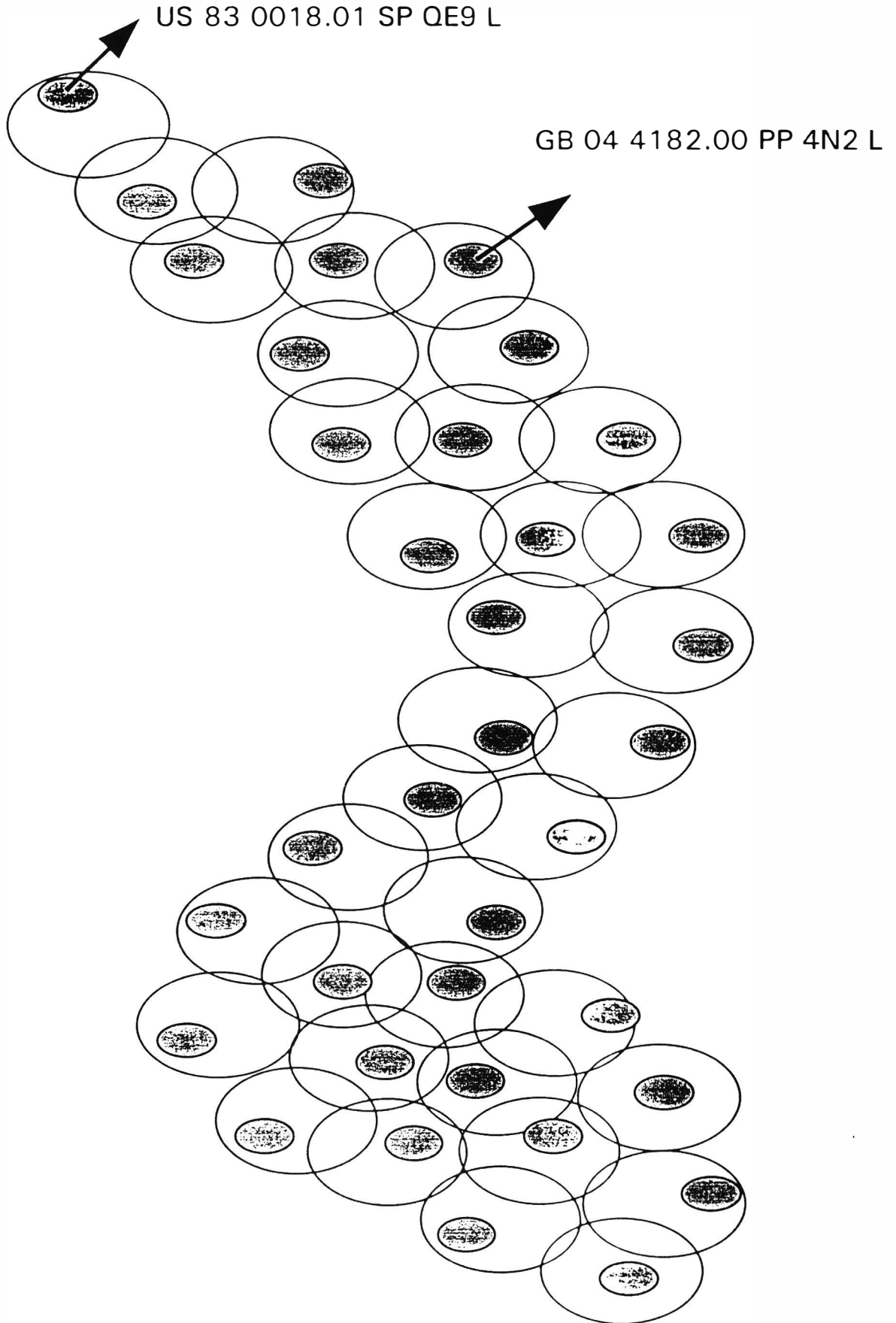
XXX Amount

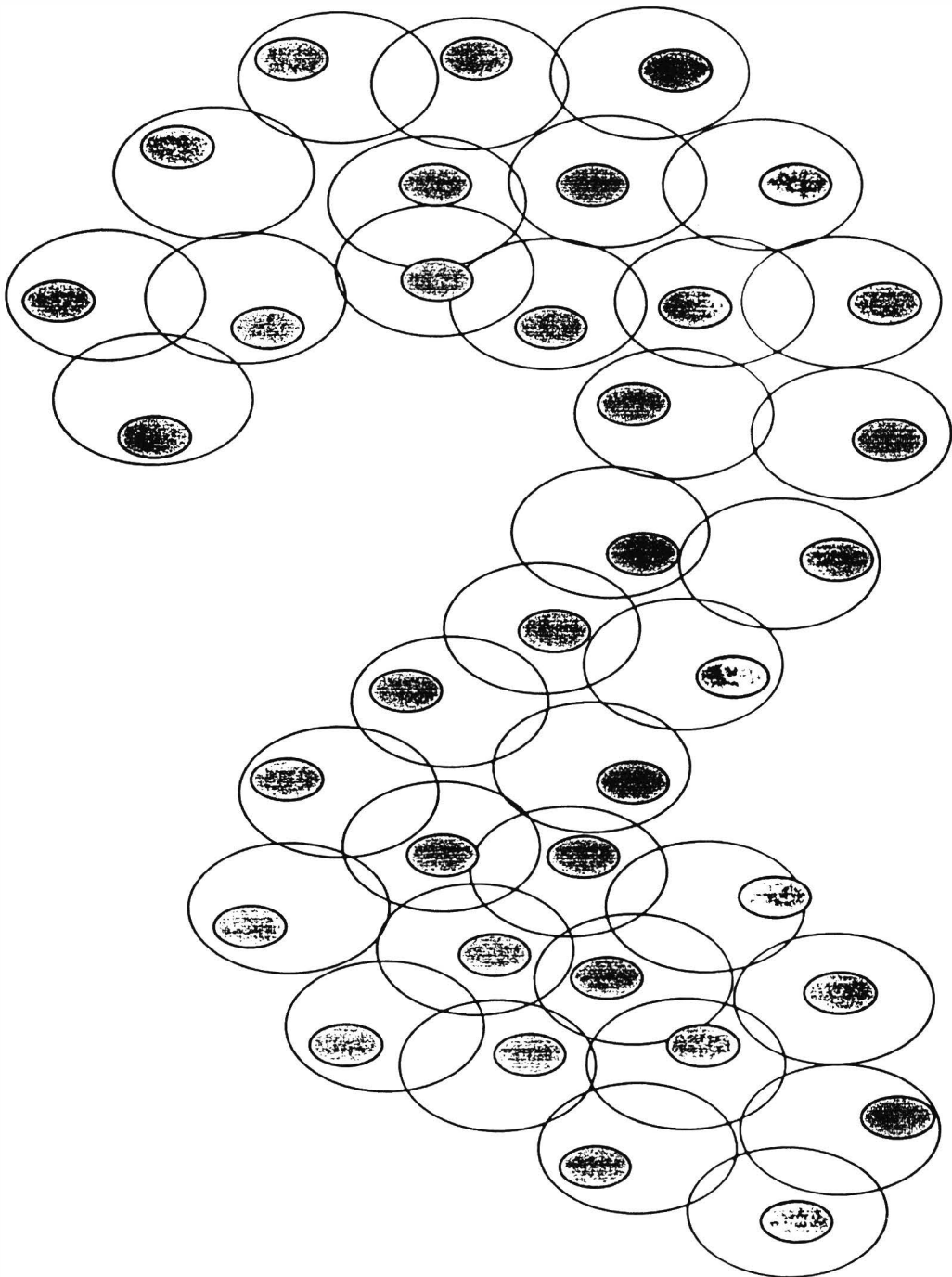
XX Right - Type 2

XXX Amount

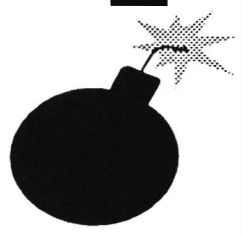
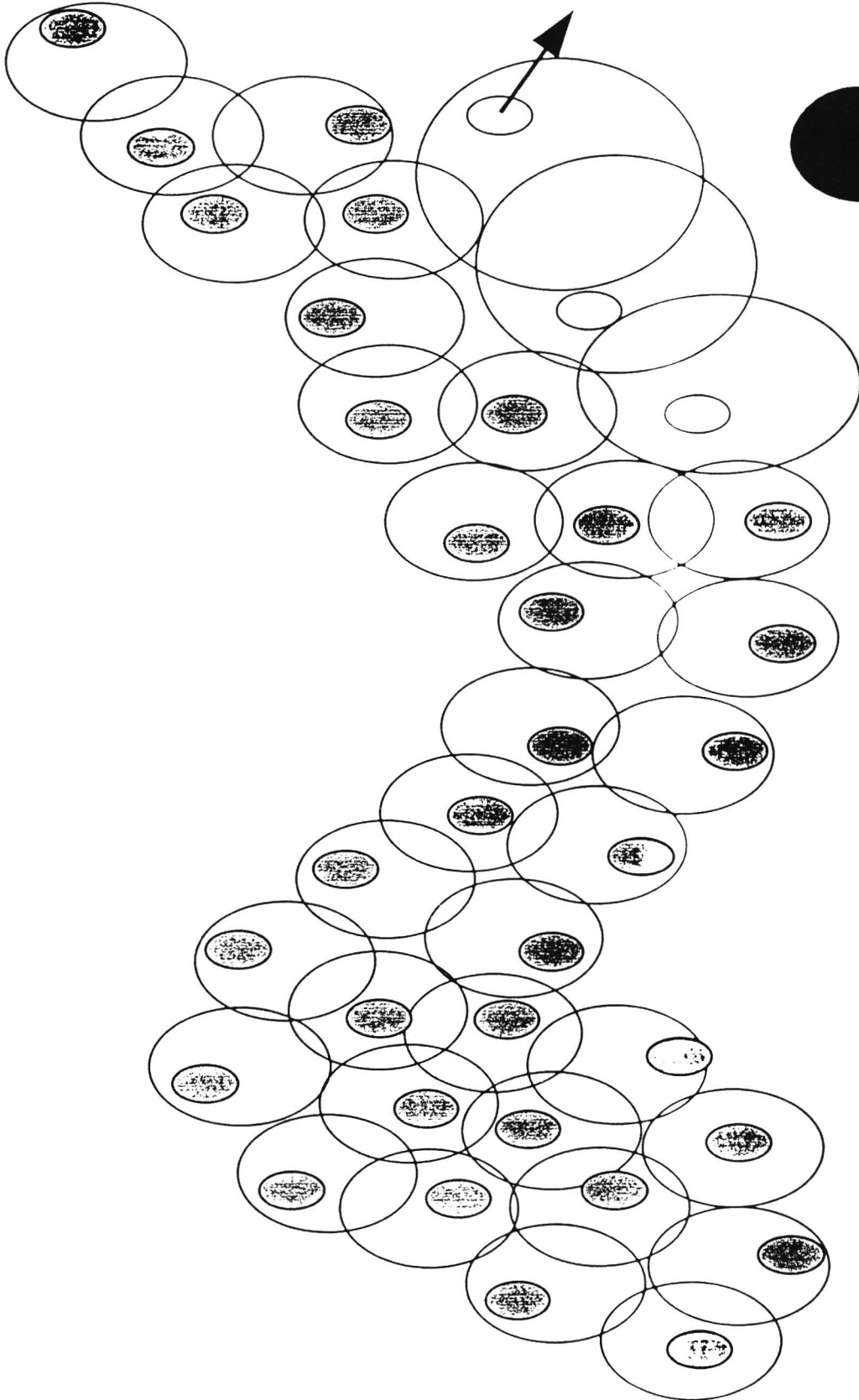
XX Right - Type n

XXX Amount



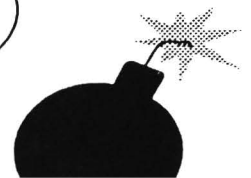


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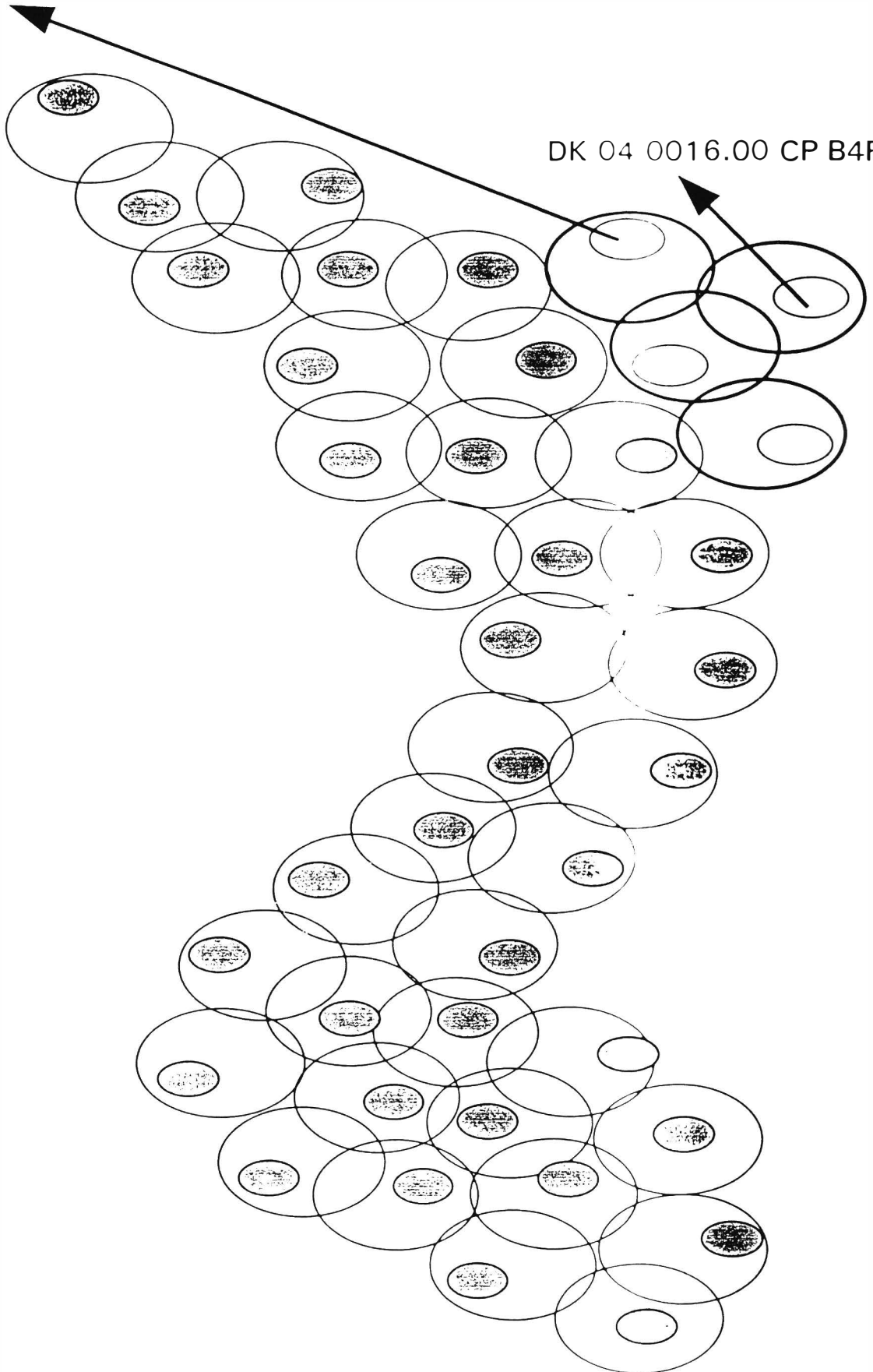
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**COPYRIGHT DIGITIZED:
PHILOSOPHICAL IMPACTS AND PRACTICAL IMPLICATIONS
FOR INFORMATION EXCHANGE IN DIGITAL NETWORKS**

by

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I am grateful to the numerous comments and helpful remarks I received while preparing this presentation, and I would especially like to thank Mr. Michael Bartsch (Attorney-at-Law, Karlsruhe), Prof. Bill Cornish (Magdalene College, Cambridge), Ms. Vera Schwamborn (Flusser Estate, Den Haag) and, last but not least, Ms. Catriona Thomas who added the final touches to the English manuscript.

I. Introduction

It is the purpose of this Symposium to "examine the current status and probable evolution of digital technology in all fields of creation and distribution," and, in particular, "its implications for the protection of copyright and the so-called neighboring rights."¹

It is felt that the challenges of digital technology--the as yet unknown exchange of data it allows, especially in view of the general public being increasingly interconnected by digital networks--may render it necessary "to consider revision of the existing copyright system," and to re-balance "the scope of rights and the possible limitations on them."² This gives rise to a whole set of questions requiring answers, namely whether the existing categories of protected works should be redefined; whether new categories of works would have to be recognized; whether there is a need for the recognition of new rights for the owners of rights in preexisting protected material; whether the rights of reproduction, of distribution, of broadcasting, and of public communication would require redefinition; whether the present balance of rights and privileges reflected in current copyright laws has been upset and is therefore in need of readjustment.³

The foregoing presentations have all focused on the impact of digital technology on the creation, dissemination and protection of works and subjects of neighboring rights within particular fields, such as publishing, scientific research, the music and the film industry. They have concentrated on the possibilities of individual exercise and collective administration of rights, and, finally, on the technical possibilities offered by digital technology in order to control the uses made possible by this very same technology.

The picture thus created is rich in detail and may at times seem rather incoherent. It is therefore recommendable to take a step back and to view the whole scenario from an appropriate distance. This shall be done by way of a two-step analysis. In a first step, a summary will be undertaken of the ways in which digital technology affects the philosophy behind, and especially the basic notions of, the law of copyright.⁴ What will be said here with regard to copyright applies mutatis mutandis equally to neighboring rights. In a second step, some of the practical implications of the foregoing considerations shall be outlined and some solutions suggested.⁵

II. Philosophical impact

What then may be distilled as the general impact of digital technology on the philosophy behind, and the basic notions of, the law of copyright? Is digital technology just another quantitative technological leap entailing no further substantive adjustment of existing copyright laws than that provoked by broadcasting, film, sound recordings, copy machines, video recorders, cable networks, direct broadcasting satellites, computer programs and databases?

1. Digitization and networks

Digitization does not refer to a new work; it is not just an additional medium, nor does it constitute a new manner of using protected material. Digitization in fact means the possibility of converting all sorts of works which are traditionally embodied in different media into a binary representation. These works, no matter whether texts, sounds, images or any kind of data and information, can now be stored in a single medium.⁶

At least in theory, digitization not only opens up the possibility to convert works fixed in all sorts of media to digital form (so-called digitized works)⁷ and to join them with works which were initially created in digital form (so-called digital works).⁸ Digitization also enables the storage of all these works on the same carrier, their communication by way of the same communication lines, and, furthermore, free combination and total interchangeability thereof.⁹ Authors and producers of digitally stored material may profit from this newly created interchangeability in the same way as users, who may copy, re-use, alter and combine digital material up to the limits of their own imagination.

The effect of this interchangeability is further amplified by the fact that digital signals are distributed and communicated to an increasing extent by networks, instead of being stored merely on material carriers. Generally speaking, a network is defined as the linking of--at least--one dispatcher to several receivers. Depending on the structure of the network, receivers may also be able to communicate with each other, and eventually communicate information back to the dispatcher.¹⁰ If a network provides for the latter possibilities, it is said to be interactive.¹¹ A network can consist of any kind of "carrier" capable of transporting information, such as copper and glass fibre cables, but also wireless broadcasting waves. However, due to the scarcity of radio frequencies, apart from traditional broadcasting, Hertzian waves are mainly used in practice for individual point-to-point communication rather than for networking.

As the previous interventions have amply demonstrated, the full potential of digitization and networking just outlined has yet to be exploited.¹² The current situation seems more like an amalgamation of technology distributing analog or digital signals by a material carrier or transmitting them via networks.

The following chart undertakes to position some of the technology currently employed:

	ANALOG	DIGITAL
MATERIAL CARRIER	<ul style="list-style-type: none">- Videotape- Videodisc	<ul style="list-style-type: none">- CD (music)- Photo CD (image)- CD-ROM (text; multimedia)
NETWORK (cable and/or broadcast)	<ul style="list-style-type: none">- Telecopier- Analog picture transmission- Analog broadcasting	<ul style="list-style-type: none">- On-line database- Digital picture transmission- Digital broadcasting

Fig. 1: Present analog/digital technology using material carrier/networks

The previous interventions also made it clear that consequently both the impact of each technology on copyright law, and the copyright problems of the respective forms of signal distribution, are far from being uniform. These differences are even further accentuated by several additional factors such as, in particular, the extent to which end user devices are distributed,¹³ their storage¹⁴ and transmission capacity,¹⁵ the use for which a particular end user device is designed,¹⁶ and above all, their compatibility. For instance, a music CD cannot run on a computer yet, and text stored on a diskette cannot easily be transferred onto a CD-ROM; likewise, a music CD and a CD-ROM usually still need two different players, and it was only recently that a combined music and picture CD-player was presented.¹⁷ Furthermore, unless encoded, the digital form of digitized material is in general much more accessible to the user when it arrives at the outlet of a network than when stored on a material carrier.¹⁸

Thus, the practical effect of digital technology on the extent to which protected material is used, may call for immediate legal action in one field (e.g., home copying of digital broadcasting or of on-line material displayed on the user screen), but not so much in another (e.g., copying of remote sensing satellite data). Similarly, the extent to which new technical devices can be installed to control effectively unauthorized uses of protected material--devices made possible by the very same digital technology which enables intensified and generally uncontrollable use of protected works--largely depends upon the kind of work used and the actual use made. For instance, there is little risk that image material transmitted in digitized form will be professionally reproduced without authorization, since the reduced data transmitted for selection purposes does not show a resolution high enough in order to obtain a commercially satisfactory print.¹⁹ However, similar devices might be more difficult to install for the protection of textual material, since one cannot just drop two out of three characters in order to prevent the user from copying and re-using the protected text as a whole.

However, certain criteria are common to all the technologies mentioned, and it is these criteria and their effects on copyright law that demand our attention. Of course, this means generalizing to some extent. In addition, existing trends will have to be extrapolated into the future. But in view of the rapid progress of technology this appears to be justified. The future will certainly bring almost, if not complete, accessibility and interchangeability of data, thus allowing all kinds of works, material and factual information, formerly fixed in different media,²⁰ to be conveyed by all means of dissemination for all kinds of uses.²¹

In essence, it is submitted here that digital technology, even if combined with digital networks, only marginally affects the philosophy behind the law of copyright and neighboring rights as presently drafted. However, digital technology, together with digital networking, does fundamentally affect several of the basic notions employed in order to implement this philosophy in practice.

2. Copyright notions

Hereafter, some of these consequences shall be outlined. It seems that the repercussions of digital technology and networking will be mostly felt in relation to the concepts of "work," "author," "public" communication, and finally "reproduction," as far as exploitation rights are concerned.

a) "Work"

The mere fact that digitization allows written works, images and sounds to be combined without limitations, does not in itself pose a problem for the concept of a "work," although this technology extends considerably the possibilities for creative manipulation of existing material.²²

However, a problem may arise for the following reason. If at the time the work is stored its contours seem to be well defined, a user with free access to the digital form of the material may retrieve whatever part of the initially stored work he selects, and furthermore, not only parts of just one work, but of all the works stored.²³ Thus, the output-units do not necessarily correspond to the input-units. This question as to the "identity" of the work has also surfaced in the context of database protection. Here, it is all but clear what has to be regarded as the "units" of works or material stored, the selection or arrangement of which will determine the originality of a database.²⁴

Furthermore, the fact that what was traditionally regarded as a single work may in its digitized form have to be considered a collection of thousands if not millions of single data tends to obscure the distinction between what is protected as a "work" and what must remain unprotected as the mere "information" contained therein. The smaller the units are to which protection will be granted--the smallest unit possible being any combination of data to which a meaning is attached, i.e., arguably a byte--, the more copyright will protect not only a creative work, but mere "information."

Of course, even before the advent of digital technology, any novel could certainly be described as a combination of letters and single characters, and a painting as several millions of picture dots or pixels, but for copyright purposes, this was previously simply unnecessary. But in a digital context, the question of determining what constitutes a "work" as a point of reference has its bearing on the determination of authorship, on the definition of originality and of exploitation rights, as well as on the ascertaining of partial or complete infringement.

To what extent this erosion and dissolution of the contours of a work will be felt in practice, depends on the degree to which the user will be able--by means of current or future electronic end devices--to access directly the digital code form of the work. Neither a Gameboy nor a CD-player permit such direct access, but a computer does; current data bases may only allow access in respect of certain search criteria, but future data base terminals may allow the user unrestricted access to the digital form of the material stored in the data base. Indeed, it seems that the more digital data are transferred not on a material carrier, but via network lines, the more likely it will be that the receiver of such data may gain direct access to them.

b) "Author"

Digital technology and networking will have two main effects on the concept of "author"-ship. The first one results directly from the change in factual access possibilities, the second one is more closely linked to the change in the concept of what constitutes a "work." Interestingly enough, these two effects have opposite tendencies.

First, traditional copyright concentrates on the idea of a single person, or group of single persons, when reference is made to the person who created the work. However, given the facilitated accessibility of pre-existing material in digital format especially via networking, the independent creation of a new work on the sole basis of unprotected ideas and principles will become more and more unlikely. Rather, to an increasing extent, any future creative process would typically start on the basis of pre-existing digital material, adopt parts of it, alter them, and whilst independent variations and maybe some new material were added. This trend will speed up where several authors work together interactively.²⁵ In a certain way, the distinction between the author and the user of material becomes blurred, if not obsolete. Therefore, in the not too distant future, there might hardly be any more authors, but a multiplicity of "contributors."²⁶

According to traditional copyright principles, these contributions will at best show some originality of their own, and those who have made them will at best have acquired rights in adaptations, if any. It follows that unless the last contributor has contractually acquired the rights that prior contributors may have with regard to the exploitation of the adaptation of their works, the rights in the resulting product will be held jointly by all contributors who have made a protectable contribution. In cases of subsequent contributions which have not been made in common, this result will most likely be unwanted and impractical. Such common ownership may also be prescribed by national law where several persons have interactively made their contributions, but in this context solutions proposed by the traditional rules of joint, common and composite authorship contained in national laws would seem to be more acceptable.

Second, if digital technology and networking thus have a tendency to replace the "author" with mere contributors, the dissolution of what constitutes a "work" as described above²⁷ seems to work quite to the contrary, i.e., in favor of the contributors' status as authors. The reason for this is the fact that, if single parts of the entirety that was traditionally considered a work--eventually even any combination of data to which a meaning is attached--are regarded as independent "works," it would consequently be possible for independent "authorship" to attach to any of these minimal combinations.

c) "Public" communication

Traditionally, a work was created within the author's private sphere, in his or her library or studio. Upon publication, the work then left this private sphere and entered the public sphere of the marketplace. There, the first copy of the work was reproduced and/or publicly communicated, before it ultimately entered a private sphere again, namely the one of the person enjoying the work. Generally speaking, it is the function of copyright to protect the author's both ideal and economic interests in his or her work while this work is in transit through the public sphere.²⁸

The following diagram is intended as an illustration:

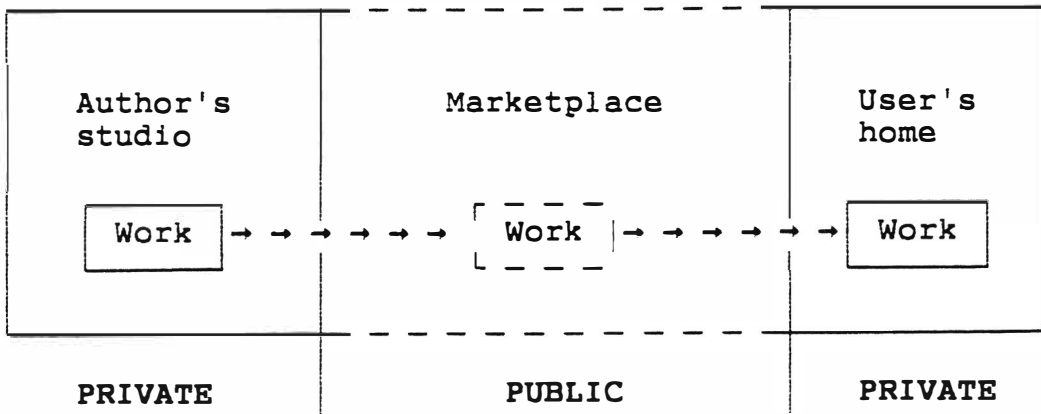


Fig. 2: Transit of the work from private through public to private

How do digital technology and networks affect this background against which copyright was previously applied?

Obviously, digital technology alone doesn't, since a work stored on a material carrier in digital form also travels the route from private via public to private.²⁹ Rather, the problem caused by digital technology as such is one concerning the ease of reproduction. However, it is the network which brings about the substantive change. It links the private sphere of the author--or of the person or entity offering the work in its marketable form--directly to the private sphere of the person who enjoys or re-uses the work. Thus, the public sphere on which copyright relies to such a great extent is eliminated,³⁰ and little more is left than the umbilical cord of the connecting net-line which runs through what used to be the now-eliminated former public sphere. It also follows from the disappearance of the public sphere that any person enjoying or re-using a protected work via a network, reaches from his or her own private sphere directly into the private sphere of the author who makes the protected work available.³¹

The picture now looks as follows:

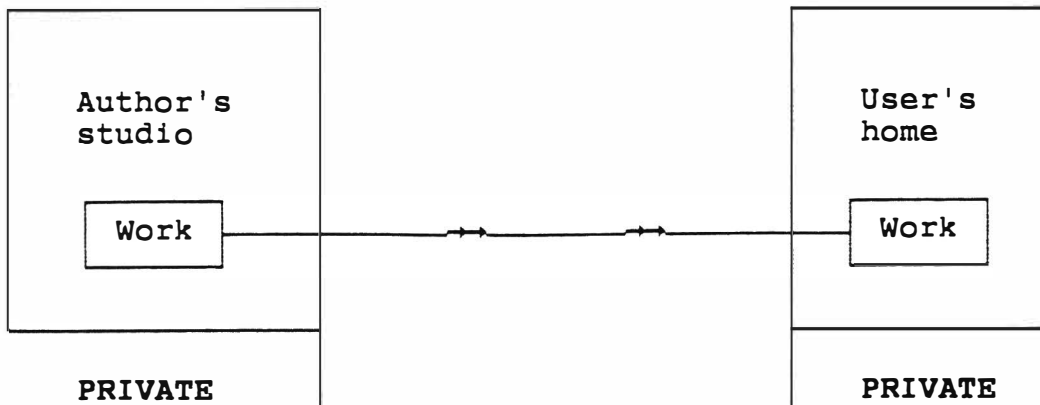


Fig. 3: Elimination of the public sphere: Transit of the work from private to private

Once it has been understood that networking leads to the elimination of the public sphere, it will immediately be understood why the courts are currently somewhat puzzled by the "public" aspect of new distribution forms such as hotel television, video booths, music played over the telephone, and on-line viewing of protected material by one person only at a given time³². Any attempt to still define the relevant public as a group of unrelated people using protected works either in the same "public" place, or at least simultaneously in their respective private homes, must necessarily fail to comprehend the problem.³³

Therefore, what is needed is an adjustment of the definition of what constitutes a "public" communication. Furthermore, we are left with the additional legal problem of how to protect the communication line adequately against acts of unauthorized tapping. One may understand the netline linking the two private spheres as the "remnant" of the former public sphere, which reaches into both private spheres. Consequently, acts of unauthorized tapping must be prevented even if they take place in the private sphere of the receiving side,³⁴ e.g., by way of decoding encoded program signals without the consent of the cable service provider. In view of the ongoing implementation of integrated services digital networks (ISDN), the necessity to provide this kind of protection will without doubt increase dramatically within the next few years.

d) "Reproduction" and use rights

The main feature of digital technology is that it permits the representation of each protected work in binary code and thus its storage in an electronic memory, irrespective of the medium in which it was primarily realized. Furthermore, networking enables rapid transmission of any work in digital form.

It follows that works which traditionally have been distributed in material copies will be distributed to an increasing extent via networks, i.e., by way of an immaterial distribution of binary signals. This will lead to a growing number of disparities between the two ways of work distribution, since a considerable number of copyright rules only applies to material copies of a work. The recently adopted EC directive on lending and rental³⁵ may serve as an illustrative example; according to its wording, it only applies to the rental and lending of material copies, but does not apply to the economically similar distribution of--possibly even identical--works via networks. In addition, the current equal treatment of distribution of works in material and in immaterial form, such as the freedom of reading a book and of viewing a work on the screen, may have to be reconsidered.

Furthermore, works in digital form serve increasingly utilitarian purposes rather than those of pure enjoyment or entertainment. Consequently, the dividing line between (private) enjoyment of protected works, which has so far been largely copyright-free, and the (public) commercial re-utilization of protected works subject to copyright becomes more and more blurred. Both purposes presuppose the same restricted acts and in a digital context, they may both be described adequately as appropriation of information. Consequently, digital technology and networking exert considerable pressure to subject acts done in private to an exclusive right enabling the rightsowners to control the fate of their works.

Finally, unless encoded, binary signals may be copied at great speed and at a low cost without any quality loss. This may be compared to similar possibilities of mass-copying opened up some years ago by reprography and photocopying. Yet, technically as well as economically, the process of electrocopying is different from that of photocopying since "it enables the user to store materials and to reproduce them at will, to index them, and (depending on the process used) to adapt them to individual requirements." It therefore "creates a considerable republishing source which must inevitably conflict with the ability of copyright holders to exploit the proper individual value of the works they have produced and invested in."³⁶

III. Practical implications

1. Solution methods

The following section will attempt to give some hints as to where to look for answers to the copyright questions raised by digital technology and networking. This shall not be understood as a complete system, and occasionally not even as ready answers. At times, adaptation of existing concepts to new circumstances is attempted, and at times the new circumstances are taken as the starting point for the development of what might be new concepts. In some instances, a merely modified understanding of an existing concept may lead to the adaptation of current copyright law to the new circumstances.

2. Re-definition of copyright notions

a) "Work"

The blurring of the boundaries of what constitutes a work might not prove very easy to deal with. However, even if it seems that any, even the smallest, entity of digital data might in theory qualify as a "work," in order to qualify the relevant entity of data would have to carry at least some meaning. In practice, the "unit" in which digital data are being commercially marketed may serve as a guideline in order to determine what must be considered a "work" for copyright purposes. So far, originality has been considered the factor which indicates, and at the same time justifies, copyright protection. The rationale behind this rule is easy to understand. Only such a person shall acquire rights who has made a substantial contribution. To decide otherwise would indeed mean to create monopoly rights over parts that are too small, which in turn would hinder the creation of larger creations in which society has a clear interest. Consequently, there is no reason why small scale variations of pre-existing works should be encouraged by way of promising an exclusive right for them as a reward. However, digital technology makes smaller "units" marketable than would satisfy the originality criterion. Those units would comprise both small investment intensive units and units with little added value which are yet commercially valuable. This aspect will without doubt increase the pressure to protect mere investment and to grant protection to any object that has a commercial value.

The newly proposed right against unfair extraction of databases³⁷ in the EC and protection of single sounds may serve as illustrative examples. In essence, the determination of what shall constitute a "work" for copyright purposes will be a process of weighing the interest in protection against the interest in free accessibility and appropriability.³⁸

In addition, when special rules are adopted for certain kinds of works, such as semiconductor integrated circuits, computer programs and databases, the question is which set of rules are applicable once such works have been stored in digital form? Is the computer tape, on which the data for integrated circuit layout has been stored, to be regarded as a semiconductor chip or as a database? Likewise, it may not always be easy to distinguish between a set of data forming a computer program, and a set of data forming a database.³⁹ Similarly, whenever material is combined into one marketable multimedia product, it may not always be easy to decide which part should have a legal life of its own and which not.⁴⁰

Finally, in view of the fact that works may be marketed simultaneously in digital/digitized and in non-digital/non-digitized form,⁴¹ any differences in the definition of what constitutes a protectable work, or any other differences in legal treatment caused by the adoption of special rules are in need of specific justification.⁴² Otherwise, it would invariably lead to a distortion of competition.

b) "Author"

Works created on the basis of several individual contributions are not actually new apparitions. Apart from the more recent phenomenon of visual art works executed by combining several media,⁴³ there has been opera and, most notably, film. To the extent in which it was still possible to isolate the different media within the "Gesamtkunstwerk," copyright proceeded from the fiction of coauthored or composite works, and in the case of film exploitation was facilitated either by far-reaching legal presumptions regarding the transfer of exploitation rights, or by the introduction of a straight producer's copyright.

In a digital context, the rules on multiple authorship seem to be an appropriate model whenever several authors create a digital work in common, or whenever several clearly defined works are joined together in order to constitute a single new marketable product. This is the common setting for the development of new multimedia applications. Here, the situation is not very different from the writing of a computer program by several programmers, or the development of a database by domain experts, knowledge engineers and programmers. If in some of these instances it may seem questionable whether joint ownership--or the entitlement of each author to individually exercise the rights with regard to his or her own part--will be appropriate in practice, then the exercise of the respective rights can be regulated by way of contract. In addition, this has the advantage of enormous flexibility.

As has been pointed out, the real problem lies where multiple authorship may not be established but only contributions which, according to a traditional point of view, would at best be considered adaptations. Of course, any increase in the number of those holding rights in a certain protected subject matter will ultimately decrease each rightholder's share in the proceeds generated by the exploitation. Furthermore, the larger the number of persons holding rights in one protected subject matter is, the greater the pressure will be to accommodate the exercise of all their exclusive rights in order to provide for relatively unhindered exploitation of the work.

Therefore, should the traditional rule of copyright in adaptations be modified? True, if the center of creative activity shifts in a digital and networking context, as pointed out above,⁴⁴ from authorship to adaptation, it would then seem logical to provide for a more sophisticated legal instrumentarium regulating rights in adaptations. But how should copyright in adaptations be modified?

First of all, it should be noted that the problem loses its acuity insofar as smaller than traditional works will also be regarded as copyrightable works in a digital context.

Second, the instrumentarium already provided for in current copyright legislation might come to mind, such as the duty of the owner of the rights in the pre-existing work not to unduly withhold his or her consent to the exploitation of the adaptation, or far-reaching presumptions of transfer of rights. Likewise, especially from an Anglo-American perspective, a producer's copyright would also have to be considered, which would accord any contributor merely the share in the proceeds as contractually agreed upon. However, even a producer's copyright could not secure the producer rights which the person making a contribution on the basis of the production agreement does not own. An alternative solution appears impossible, because it would in effect override the fundamental principle under almost any national system of copyright law, excluding the bona fide acquisition of an entitlement to copyright. Furthermore, it seems that within the context of digital technology and networking, pre-existing material will often "just be there," and no contract will have been concluded between the owner of the rights in the pre-existing work and any person or producer making subsequent contributions. Absent an agreement, it will be most unfair to "cut off" rights which owners had in their works before an additional contribution was made.

It is imaginable that the exclusive rights of those who have made contributions will have to be reduced from the outset to a mere claim for remuneration, which might then be administered collectively. However, most of these solutions would not seem appropriate under circumstances where a "main" contribution could still be spotted amongst an eventually large number of marginal contributions.

The options do exist, and their number could perhaps be increased by the invention of yet another legal mechanism. However, the central issue of discussion will be to find out which of the solutions should be applied to which constellation of facts in order to reach fair and adequate results.

c) "Public" communication

It seems that a relatively modest re-definition of what constitutes the term "public" will solve the problems created by the elimination of the public sphere described above.⁴⁵

The direction is indicated by the precedent of broadcasting which may also be understood as a "network," since protected material is sent from private to private, thus skipping the public sphere.⁴⁶ The advent of broadcasting indeed posed a major threat to the interests of copyright holders, and rather quickly, the RBC had been amended at the Rome Conference in 1928 and Article 11bis introduced.⁴⁷ According to the solution retained, it is not the effective reception by the general public of the signals emitted which is decisive, but the mere possibility that a public may receive the signals.

Similarly, in the context of a network which eliminates the public sphere, public access to a protected work no longer requires "publication" in the sense that the work be transferred from the private to the public sphere. Rather, from a factual and an economic perspective, access only requires that within the private sphere of either the author or the person marketing the work, this work is transferred from an inaccessible (private) part to another (public) part of the private sphere which is open to access for third parties.

In the world of tangible goods, such an area may be compared to the steps outside the front door of a private home, where the empty milk bottles are placed so that the milkman can exchange them against full bottles the next morning. The doorsteps are still on private ground, and yet they are accessible to the milkman.

What is decisive is that, similarly to the house just mentioned, each private sphere connected to a network has two distinct parts: one part which is publicly accessible and another part which is publicly inaccessible. Consequently, a work is being made "publicly" available as soon as it is transferred, within the private sphere of the author--or the person marketing the work--, from the inaccessible part to the part which is accessible to third parties. Such a transfer may be effectuated in two ways. Either a protected work is transferred into a publicly accessible part of the private sphere already existing, or access to such a part is newly opened for third parties. The following diagram may serve as an illustration:

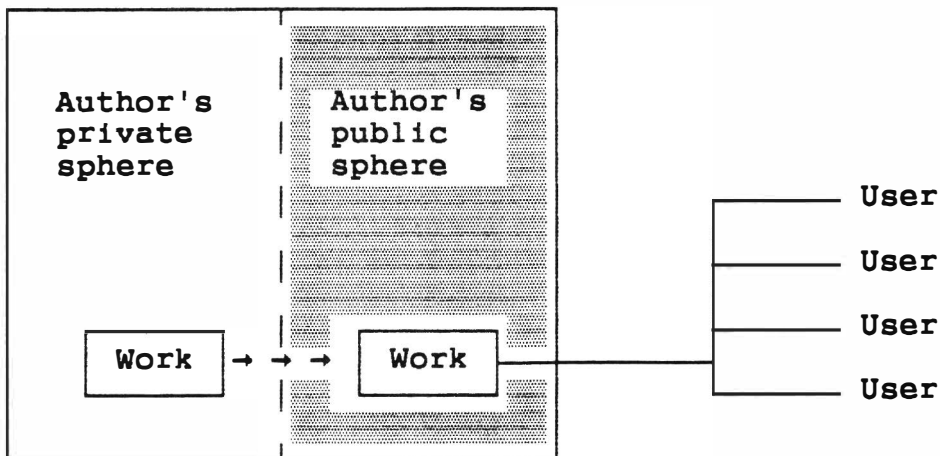


Fig. 4: Communicating a work to the "public" in a network context

Of course, the work would only have been made "public" if a multiplicity of users does in fact have access, and if the net-line is not merely used for a personal point-to-point communication. Admittedly, in some instances it may not be easy to make this distinction, notably in cases of closed user groups and of transmitting devices which can be used for both private and public communications, such as the telephone, telecopier or electronic mail.⁴⁸ But it is claimed here that in order to decide this question, the traditional definitions of what constitutes "public" under national copyright laws could still prove useful.⁴⁹ Similarly, a closed user group would have to be regarded as "public," provided decoders have been made available to the general public, or a sufficiently large segment of it, by the rightowner or with his consent.⁵⁰

However, in a network context it may no longer be necessary that each single enjoyment or re-use of protected works takes place in public, or that several people would have to use the work either in the same place or at the same time.

The protection of the netlines against unauthorized tapping has two main aspects. First, protection must cover the protected material communicated via the network, and second, the person providing the network service also seems in need of legal protection. Furthermore, it has to be decided whether this protection, beyond covering the act of tapping alone, should likewise extend to the putting into circulation and to the possession for commercial purposes of any means the sole intended purpose of which is to facilitate the unauthorized removal or circumvention of any technical device which has been applied in order to protect the network against unauthorized access.

Increasingly, these problems are dealt with, but apparently individually rather than on the basis of a common theory.⁵¹ Furthermore, it should be noted that where the signals stored and communicated in a network are in digital form, a criminal law protection against informatics fraud punishing illegal access to a dataprocessing system might already exist and eventually apply.⁵²

Of course, similarly to the case of the milk bottles placed on the doorstep, which have to be protected against being taken away or emptied by an unauthorized person, protection against unauthorized tapping may be secured by both legal and practical means.

d) "Reproduction" and use rights

Hence, how can the right to reproduction and other present use rights be adapted to digital technology and networking?

By now, it seems widely accepted that the storage of a work protected by copyright in an electronic memory amounts to a reproduction of the work, and is therefore subject to the consent of its author. This is true irrespective of the fact whether the medium of storage is a ROM, a hard disk, a magnetic tape or a diskette. The fact that a work thus stored may not be directly perceived by a human without the aid of a computer does not contradict this.

In all likelihood, the act of digitally broadcasting protected works will already be covered by the broadcasting right of Article 11bis RBC as presently drafted, and by national copyright laws. Other than the transmission of programme-carrying signals by wire, digital broadcasting and digital cable distribution do not constitute new means of distribution. The only difference to traditional broadcasting and cable distribution resides in the different signal representation of the contents transmitted.⁵³

However, with regard to reproduction several problems have to be solved at the level of digitization of pre-existing material, the level of internal reproduction, and the output level.

Commencing with the digitization of pre-existing material--such as storing protected material in a database--the reproduction right certainly applies whenever a protected work is stored in its full text version, but it may be questionable to what extent abstracting and indexing of protected works amounts to a reproduction in a digital context. According to traditional copyright principles, one would have to distinguish whether or not the abstract as such qualifies for copyright protection under national copyright law. If it does, then the reproduction rights have to be acquired for storage from the person who has made the abstract.⁵⁴ In contrast, indexing is generally not regarded as a reproduction of the original work, be it in the form of providing bibliographical references, be it in the form of providing key words. However, the question may be posed whether abstracting would not have to be considered a restricted act whenever reading the abstract substitutes for reading the original work. This theory is in line with Article 9(2) RBC, and has indeed been proposed for adoption into national legislation of the EC member states.⁵⁵ But this circumscription is rather vague and its contours will have to be defined by the courts in each single case.

The greater set of problems concerns acts of use and re-use made of protected material on the digital level and at the output stage. To a certain extent, these problems appear to be interrelated, and most of them have already been discussed since the introduction of copyright protection for computer programs.

A first question is to what extent the merely temporary storage of a protected work will amount to an act restricted by copyright. A related question would be whether copyright should cover machine-internal reproduction of protected works not only in whole but also in part. Two answers seem possible. Either one subjects only those acts of temporary and partial storage to copyright which, from an economic point of view, indeed open up a new additional possibility to use the protected work, i.e., any storage which allows the work, or substantial portions thereof, to be displayed, printed out or otherwise used;⁵⁶ or one subjects any act which technically amounts to a reproduction to copyright.⁵⁷ It must not be emphasized that the first approach brings with it considerable uncertainties, whereas the second calls for the introduction of exceptions for the benefit of legitimate users and the public at large.

Second, given the increasing importance of on-line retrieval services (databases, videotext, satellite transmissions), and their extension to the communication of spoken words, music, images and film, it has also been suggested that the act of viewing or displaying protected material on a screen should be subjected to copyright. This would be in line with the approach of granting to the rightholders the broadest protection possible in a digital context. Furthermore, it would put an end to the present discrimination between document retrieval in material and in immaterial form.⁵⁸

However, it might be doubtful whether it is indeed justified to introduce a display-right and adopt a broad definition of "public" communication. If an author has already received his share from the revenue created by the database provider for the use of the database, why, one might ask, should the same author then receive an additional remuneration for the actual use made? In the case of broadcasting, since the act of broadcasting has already been defined as a communication to the public and thus been made subject to copyright, the act of actually viewing the program broadcast is free, and only entails copyright regulation if the signal received is used for a further public communication, such as placing the TV set in a public place--e.g., a hotel lobby or a bar--or transmitting the signals onto a screen from which the public may perceive them. But in the digital context, the adoption of both a broad reproduction right and of a display right could be justified on several grounds. On the one hand, a display right would be required not so much to enable authors to control the actual display of their protected works, but rather to prevent the user from performing further use acts made possible once a protected work appears on his or her screen (which are, of course, restricted, but in practice can hardly be controlled). In addition, a display-right would allow the publisher of protected subject matter in electronic form to control unauthorized viewing on the basis of copyright.

Third, however, if such broad protection is adopted which goes as far as to subject normal use acts to copyright, then not only the mere use but also access to the unprotected ideas and principles underlying the protected form will require the authors' consent. Traditionally, however, the mere use of a protected work, e.g., the reading of a book, was free, as well as access to its underlying ideas. Indeed, the whole philosophy of copyright is based on this fundamental concept.

A fourth problem has to do with partial taking at the output level. Once a work is in digital format, any part of what used to be considered the "work" may be easily copied to the extent permitted by the retrieval software.⁵⁹ Of course, partial copying is not a new phenomenon. What is new, however, is that from an economic point of view, small parts of a protected work in digital form may become extremely valuable, although they may be far from reaching the level of originality required for copyright protection, or from being substantial enough to be considered a substantial taking. Furthermore, since it is no longer clear what the point of reference is, i.e., what constitutes the "whole" of the work, against which copying of a "part" of it has to be evaluated, it becomes very difficult, if not impossible, to judge the substantiality of the taking.⁶⁰ This seems especially true in view of the fact that as regards works in digital form the distinction between the "work" and the "information" it conveys becomes blurred. Must the part of a work initially stored as such, be considered a partial reproduction of the work, or merely the extraction of some of the information it contains? The sampling of single sounds and the corresponding legal controversy may serve as an excellent illustrative example, even if, admittedly, the problem of partial taking does not affect all protected subject matter in the same way.⁶¹

Finally, on the one hand, the adoption of broad copyright protection invariably leads to the necessity of drafting new exceptions to the benefit of legitimate users. This way was indeed chosen by the EC in adopting the computer program and proposing a database directive.⁶² On the other hand, the ease of reproducing electronically stored protected subject matter may call for the narrowing down, if not the elimination of existing exemptions to the reproduction right, in order to legislate in conformity with the principle laid down in Article 9(2) RBC, according to which an exemption from the reproduction right must not "conflict with a normal exploitation of the work and does not unreasonably prejudice the legitimate interests of the author." Otherwise, the newly opened possibilities of unauthorized appropriation of protected subject matter might themselves lead to a limitation of the "normal exploitation" expectancies under Article 9(2) RBC.

This will be especially true with regard to existing exemptions for personal use, which under most national copyright laws currently seem to allow for a certain private digital storage of pre-existing works and for private reproduction of digitally stored material. Here it would seem appropriate to subject any private act of storage or reproduction to copyright, with a possible de-minimis exception. Such a solution was indeed already proposed by WIPO as part of a possible future Protocol to the Berne Convention.⁶³ Exemptions concerning reproductions made by libraries, archives and educational establishments, and those made for teaching and research purposes will also have to be re-examined. Here again, the WIPO proposals may serve as a basis of discussion for possible solutions,⁶⁴ if not with regard to an International Convention, then certainly with regard to national copyright legislation, provided, however, that preference is not given within the framework of "fair use" or "fair dealing."

An additional question would then be how to administer effectively these broad reproduction rights. Apart from the question as to which points should be covered by contractual provisions, the major question is to what extent it makes sense to license individually the rights at issue, and to what extent collective administration of the rights would seem more appropriate. The answer to this question will, of course, depend largely on the respective stage at which a party stands in the author-publisher-host-user chain of electronically created and/or distributed copyrighted material. Furthermore, the type of user of copyrighted material will have a bearing on this question. An additional concept to be considered is the possibility of so-called co-operative licensing.

Without going into detail, it may be noted that before a work is published, the author of a work should individually exercise his or her right of first storage against the publisher or any other direct user.

With regard to works published, a distinction would have to be made.

To the extent that storage and reproduction constitutes a primary market, individual exercise of the rights will be most appropriate; where defined user groups or corporate users are involved, the form of co-operative licensing could appear appropriate, i.e., model contracts or blanket licences may be concluded between the groups of rightholders and users involved.

Collective administration might at first only appear a last resort, where individual control fails. But the positive effect which collective administration can have for each single rightholder, even where a certain degree of individual control is still possible, should not be underestimated. Collective administration would seem appropriate where a great number of unorganized rightholders and/or users is involved. The prime task for Reproduction Rights Organizations (RROs) would therefore be to administer collectively the rights with regard to home-electrocopying. In this area, it might seem worth considering extending existing systems concerning the collective administration of home-photocopying rights to all sorts of machines capable of electrocopying, such as PCs, readerprinters and telecopiers.⁶⁵ In this respect, to be content with what at first looks like a "mere" claim to remuneration, may in the end serve the financial needs of rightholders much better than to hold on at all costs to an uncontrollable and unenforceable exclusive right. Given the generally impossible control of such home-use, the RROs have so far seen "no alternatives, as reward mechanisms to machine/equipment levy systems, or some similar general fee systems not directly related to intensity of use."⁶⁶ Furthermore, it is possible that RROs will exercise their classic role of "dealing on behalf of a multiplicity of rightsowners in order to satisfy quickly and easily the access needs of a multiplicity of users"⁶⁷ to works already published in electronic form with the consent of the authors and publishers. It appears that rightholders and RROs are on the way to achieving a mutual understanding concerning their respective field of activities.⁶⁸

IV. Conclusion

Given the rapid technological development and the relatively early stage of discussion, it would somehow be preposterous to draw ultimate conclusions. However, several factors have already crystalized, and the route which copyright will most likely follow in the age of digital technology and networking becomes more visible the further we proceed.

It should have become clear that neither digital technology nor networking nor a combination thereof mandates a general deviation from the basic copyright principle that authors should participate in the proceeds generated by the exploitation of their protected works. Likewise, the instrument in order to achieve this generally remains the principle of exclusive rights. Of course, as the previous interventions have demonstrated, specific circumstances may call for certain limitations to exercise these rights. Such limitations may take the form of mere claims to remuneration or of collective administration of some of the rights in question. Not only do such limitations re-define the balance of rights and privileges, but they can also serve the interests of both the authors and the public at large.

However, what is called for is an adaptation of several of the existing basic copyright notions, in order to strengthen the authors' and rightholders' control over their works, and secure their fair participation in the proceeds generated by the exploitation thereof. Similarly, these adaptations will have the purpose of avoiding inconsistencies in the legal status of works in both traditional and digital form. Such adaptations would notably concern the exploitation rights of reproduction and public communication. This presentation was intended to define parameters for a possible solution.

Furthermore, the notions of "work" and "author" will have to undergo revision in the near future. As far as they are concerned, the changes to be made will probably be of a more fundamental nature, and it might not be inconceivable that digital technology and networking will ultimately erode the basis of the copyright system. However, in view of the fact that digital interactive multimedia has only just started, some time for further consideration does remain.

Finally, whilst questions of how to administer existing rights appropriately within a digital and networking context will very likely be solved to the satisfaction of the parties involved before long, it will probably prove more difficult to achieve international consensus with regard to the re-definition of these rights and the corresponding exemptions. Indeed, the diversity of the factual situations to be mastered within the context of digital technology and networking seems to necessitate precise and thus necessarily detailed rules, unless the definition of adequate solutions will be reserved to the courts under concepts of fair use or fair dealing. However, so far no general agreement has been reached on this point, and the dispersed national solutions adopted still await harmonization. But is it really surprising that harmonization takes time, especially in view of the fact that a dialogue in the age of digital technology and networking involves an ever growing number of participants?

NOTES

- 1 WIPO International Bureau, WIPO Worldwide Symposium on the Impact of Digital Technology on Copyright and Neighboring Rights, General Information and Provisional Program, Doc. SDT/Inf.1, para. 4.
- 2 Ibid, para. 3. See also EC Commission, Proposal for a Council Directive on the legal protection of databases, COM(92) 24 final; SYN 393 of May 13, 1992, para. 3.1.4: "With the possibility of converting all written works, facts, numerical information, images and sounds into a binary representation, the concepts of fixation and reproduction, storage and retrieval of the materials in question have to be re-examined."
- 3 Ibid, para. 6(a)-(g). In addition, the question has been asked as to the impact of digital technology on prevailing contract and licencing terms and practices, and to what extent new contractual provisions could replace detailed new statutory regulation; and, finally, as to what technical possibilities digital technology might offer for effective protection and administration of rights granted, including what kind of legal protection may be required and justified for such technical protection devices; *ibid*, para. 6(h)-(k).
- 4 See II.
- 5 See III.
- 6 Already before the advent of digitization, technological progress had made it possible to transfer works from one medium to another. Music could be fixed in a sound recording, a novel could be turned into a movie, and text, sound, and visual images could be broadcast. However, since all these media worked on the basis of analog signals and combination was only possible in books, films and broadcasts, neither the media change nor the combination of what used to be different media opened up exploitation possibilities which would have unfairly impaired the rightholders' exploitation interests. Rather, problems were caused by user devices such as video recorders and photocopying machines, which allowed for uncontrollable mass use of analog signals.
- 7 E.g., a book stored on a CD-ROM.
- 8 E.g., a computer program.
- 9 For the development of this idea of reducing broadcasting and film, print and publishing, and computers to a unique storage and transmission format, as well as inventing practical applications, see Brand, *The Media Lab--Inventing the Future at M.I.T.*, New York, 1987, pp. 9 et seq.
- 10 This largely depends on whether a network has a tree-, or a star-structure, or whether it provides for a back-channel.
- 11 It should be noted that in current multimedia language, the term "interactive" is sometimes also used for pseudointeractivity, where the user consulting information stored on a CD-ROM is not limited to predefined question formats, and must not follow a certain predefined path (e.g., CDI ("CD-Interactive," coined as a Philips trademark)).

12 An application may be described by its characteristics in terms of "co-operative," "hyper-structure" and "multimedial" (so-called CHM-cube).

13 For copyright purposes, it will be of paramount importance whether a particular application will be mass-marketed, or whether its distribution will be limited to professional high-end equipment. To cite an example, while there has been a tremendous increase in the market penetration of PCs, CD-ROM-drives are still not installed on a mass basis, although the first laptop with a built-in CD-ROM-drive has already been presented.

Furthermore, it should be kept in mind that the extent to which certain user devices are distributed or on-line services used may vary considerably from one country to another. For instance, Germany still lags far behind the U.S.A. and the U.K. in terms of database users; in contrast, or perhaps even in reaction to this, the CD-ROM market has picked up just some time ago.

14 Standard PCs, widely distributed with no more than 20 or 40 MB hard disk capacity are hardly sufficient to copy or exchange huge amounts of data. In comparison: an HD-diskette stores 1,44 MB; a hard disk between 20 and 120 MB or more; a CD-ROM 600 MB. If text is stored in an uncompressed form, 1 MB represents roughly 500 pages. A PC can therefore store between 10,000 and 60,000, a CD-ROM up to 325,000 pages of text (generally, however, additional storage space has to be reserved for the retrieval software). High resolution scanning of a single 24 x 36 mm slide produces 18 MB; when compressed by 4:1, slightly over 100 pictures may be stored on a CD-ROM. In order to achieve high resolution video, the MPEG (Motion Picture Expert Group) standard has been set at around 190:1.

15 Currently, signal transmission by mass-marketed modems works at a speed of up to 9,200 baud; the transmission rate of N-ISDN is 64 kbps, and of B-ISDN 2 Mbps. Other European networks allow for up to 140 Mbps.

16 Although both the telephone and the telecopier use the telephone lines and transmit analogous signals, their actual use poses quite different copyright problems. Also, similar to the old Swiss "Telephonrundspruch," which transmitted music performances via telephone, some actual uses may become obsolete over time.

17 Kodak Photo CD Player PCD 860.

18 But note also the difference in accessibility of music stored on a CD, and text stored on a CD-ROM.

19 Even with software restoring defective sets of data, it will generally not be possible to restore the amount of detail lost by the reduction process.

20 Hence the term "multimedial," whereas the term "unimedial" already emphasises digital storage as the common medium, rather than reflecting and thus holding on to outdated media distinctions.

21 Currently, are deemed "multimedial" the combination of different static and dynamic media used for the presentation of information; "hypertext" non-sequential text organized in a network-like structure; and "hypermedial" multimedia components organized in a network-like structure whereby the various parts within the system can be accessed interactively throughout the system.

- 22 For the creative and artistic implications of such a "combined data space" and the connecting "highways of the mind" (the "streets of the immaterial data and picture traffic"), see Claus, *Elektronisches Gestalten in Kunst und Design*, Hamburg, 1991, pp. 66 et seq.
- 23 To cite just one example: if James Joyce's "Ulysses" were stored in digital form, a user could retrieve it as a book; but the user could likewise retrieve single pages or single words, or ask how many times James Joyce placed a colon in front of the word "metempsychosis."
- 24 See Article 2(3) of the proposed EC directive on the legal protection of databases, O.J. No. C 156 of June 23, 1992, pp. 4 et seq.
- 25 Professionals have already coined a new word for this interactive co-production. In the modern language of English abbreviations they have labelled it "CSCW," standing for "computer-supported co-operative work;" see Claus, *op. cit.*, p. 71.
- 26 This creative scenario must not be confused with the one discussed under the heading of computer-assisted, computer-produced and/or computer-created works. There, the question is whether, and if so under what circumstances and in what ways, authorship attaches to works which have been created with the aid of a computer, i.e., with the aid of computer tools, and to what extent authorship in the tools continues in the works created by or with the assistance of the tools; see, WIPO (ed.), *Questions Concerning a Possible Protocol to the Berne Convention*, Copyright 1992, 30 et seq., paras. 50 et seq., and Report of the Committee of Experts, *ibid*, paras. 100 et seq. In the present context, however, the question is to what extent authorship of a pre-existing work--which has possibly been modified with the aid of a computer tool--continues to subsist in the modified work.
- 27 See II.2.a.
- 28 The divulgation right protects an author against the transfer of the work from the private into the public sphere against his or her will; the paternity right guarantees that the bond between the author and the work appears in public; and the integrity right protects the author against any modification of the work which would be prejudicial to his honor or reputation, and which thus presupposes that the modification be perceived by the public. It follows that what has to be considered the public sphere for copyright purposes may also include publicly accessible places on private premises. Furthermore, the exploitation right to publicly communicate the work applies by definition with regard to the public sphere only. Finally, the fact that from an early stage in the development of copyright reproduction was reserved to the author even if made within the private sphere, does not necessarily contradict the finding that copyright generally protects works while in transit through the public sphere. Rather, this may be seen as protection against acts which by creating a further copy of the work open an additional possibility of enjoyment, thus having an effect in the public sphere (either such a copy is brought back onto the marketplace, or it removes a potential transfer of an authorized copy from the marketplace).
- 29 Furthermore, it is of no importance whether the work in question was initially created in analog (printed book stored on CD-ROM) or in digital form (computer program stored on a diskette or in a ROM). See also figure 1.

- 30 This model goes back primarily to the theories of postmodern philosophers trying to describe the information society; see, e.g., Flusser, Design Report, No. 17, July 1991, pp. 30 et seq., also on the political consequences of the "home as a central point in the network of personal relationships."
- 31 Generally speaking, the conclusion has been drawn that the elimination of the former one public sphere has now led to several public spheres, or, in other words, that each private sphere is at the same time--at least in part--also public, and that any of these public spheres are likewise private. Finally, it follows that from an economic point of view what used to be the "public" must now be described as the aggregate of single private spheres.
- 32 The following cases may be cited as illustrative examples: Austrian Supreme Court of June 17, 1986, GRUR Int. 1986, 728 (hotel video as public performance), and of January 27, 1987, GRUR Int. 1987, 609 (video booths as public performance); French Court of Appeal of January 10, 1992, RIDA 153 (hotel-tv no public performance). In the USA see, e.g., Columbia Pictures Industries, Inc. v. Redd Horne, Inc., 749 F.2d 154 (3d Cir. 1984) (video booths public performance).
- 33 Furthermore, such decisions tend to be inconsistent with each other. To cite just two examples: in Germany, the Federal Supreme Court (BGH) held--admittedly in an earlier decision--that the transmission of radio signals from one central receiver to independent loudspeakers in separate hotel rooms would have to be looked at as an act outside of the scope of copyright; BGH, BGHZ 36, 171. However, there is little doubt that the transmission of signals received by a central antenna to television sets in a larger number of hotel rooms would constitute an act subject to copyright. See also, e.g., Columbia Pictures, Inc. v. Professional Real Estate Investors, Inc., 866 F.2d 278 (9th Cir. 1989) (lending videodiscs for playing in hotel rooms no public performance).
- Likewise, in France the showing of television broadcasts in hotel lobbies and hallways will have to be considered an act of public communication subject to copyright, whereas the making available of the same television broadcast to the same clients in their hotel rooms will not.
- 34 I.e., the public part of the private sphere of the signal receiver; for this incorporation of the "public" into the private see above, note 31, and III.2.c.
- 35 EC directive (92/100/EEC) of November 19, 1992 on rental right and lending right and on certain rights related to copyright in the field of intellectual property, O.J. No. L 364 of November 27, 1992, pp. 61 et seq.
- 36 The U.K. Publishers Association (ed.), Electro-Copying and Infringement of Copyright, of January 23, 1992, p.1.
- 37 Article 1(2) and 2(5) of the proposed directive, op. cit.
- 38 See also the definition of "insubstantial part" of a database, the taking of which does not infringe the right against unfair extraction, Article 1(3).

- 39 See the French case decided by the Cour de cassation, April 16, 1991, Droit de l'informatique 1991, No. 4, p. 33 (data included in drawing modules regarded as a computer program).
- 40 E.g., under the proposed EC directive on the legal protection of databases, op. cit., a "database" shall comprise "the electronic material necessary for the operation of the database," whereas any computer program "used in the making or the operation of the database" shall be governed exclusively by the EC directive on the legal protection of computer programs, O.J. No. L 122 of May 17, 1991, pp. 42 et seq. (Article 1(1)). Doubts have been voiced on how to apply such a distinction to the system for obtaining or presenting information, and it has been questioned on what grounds it might be justified to treat some of the database components as not having their own legal life, even if they were possibly made by a third party on the basis of considerable investment.
- 41 Such as, e.g., encyclopedias which come in paper form as well as on a CD-ROM.
- 42 E.g., when limiting the scope of the proposed EC directive on the legal protection of databases to electronic databases, the EC Commission came to the conclusion that this would not unduly prejudice against collections in a traditional form, notably on paper (recital 19; for the reasoning see COM(92) 24 final; SYN 393 of May 13, 1992, paras. 3.1.4 et seq., especially 3.1.10 and 3.1.11).
- 43 Such as collages and performances. Since about the 1940s, works characterized by the combining or the merging of two or more traditional media have been called "intermedia;" for their historic development see, e.g., Frank, *Intermedia, Die Verschmelzung der Künste*, Bern, 1987, pp. 6 et seq.
- 44 See II.2.b.
- 45 See II.2.c.
- 46 See II.1.
- 47 At the Brussels Conference in 1948, Article 11**bis** was amended to cover cable retransmission as well.
- 48 In most cases, all these devices mentioned are used to replace an oral or textual private-to-private communication, but at the same time they may be used for public communication, such as music played over the telephone to anyone calling or put on hold, advertising via telecopiers or electronic mail.
- 49 Eventually, national definitions are in need of being amended slightly in order to allow for the accessibility by several people under circumstances where, seen from an economic point of view, no enjoyment or re-use of the work takes places. However, this is not a particular problem of networks; rather it appears whenever there is in-house, intra-company or distribution of protected works within other closed user groups.

- 50 See, e. g., the definition of "communication to the public" in the case of direct satellite broadcasting as proposed in Article 1(b) of an EC directive on satellite broadcasting and cable retransmission, O.J. No. C 255 of October 1, 1991, pp. 3 et seq. (Article 1(1)(b) of the amended proposal, Doc. COM(92) 526 final; SYN 358).
- 51 See, e. g., Article 7(1)(c) of the EC computer program directive, op. cit., from which this formulation was borrowed. See also Sec. 298(2) of the U.K. Copyright, Designs and Patents Act 1988, and regarding its interpretation House of Lords decision of June 6, 1991, (1991) 3 W.L.R. 1.
- 52 See, e.g., 18 U.S.C. 2515(1)(b), Federal Wiretap Law; Section 202a of the German Criminal Code (covering both electronically as well as magnetically stored data); and Article 462-2 et seq. of the French Code pénal, introduced by Law No. 88-19 of January 5, 1988, as well as the recent introduction of new Articles 79-1 to 79-6 of Law No. 861067 concerning the freedom of communication (sanction against unauthorized fabrication, importation, offering, sale, possession and advertising of satellite signal decoding devices).
- 53 However, it is yet another question whether or not, according to national principles of how copyright contracts have to be interpreted, digital broadcasting will be covered by a grant of the traditional broadcasting right.
- 54 This may be the author of the original text, or an employee or a person commissioned by the person undertaking the storage.
- 55 Article 4(1) of the EC proposal for a directive on the legal protection of databases, op. cit.
- 56 See for computer programs, e.g., German Federal Supreme Court of October 4, 1990, 22 IIC 723 (1991).
- 57 This approach was taken in Article 4(a) of the EC directive on the legal protection of computer programs, op. cit.
- 58 Such a right of "indirect" display--as opposed to "direct" display, especially of works of the plastic and graphic arts--was proposed by WIPO in its draft of a possible Protocol to the Berne Convention; see WIPO (ed.) , Memorandum, Copyright 1992, 66 et seq., paras. 109 et seq., especially 112. The discussion amongst the experts showed that, so far, there is no agreement as to whether or not such a display of protected works on a computer screen already amounts to an--albeit temporary--reproduction; see Report of the Committee of Experts, Copyright 1992, 93 et seq., paras. 87 et seq.

Article 4(a) of the EC directive on computer programs, op. cit., for the first time explicitly subjects the "temporary reproduction" of a program in part or in whole to copyright, and therefore also the "displaying" of a program on the screen. Similarly, Article 5(e) of the proposed EC directive on the legal protection of databases, op. cit., grants the author of a database the exclusive right to "display ... the database to the public."

- 59 For this disintegration of the copyrightable "work" see II.2.a.
- 60 A definition attempt in this direction concerning partial taking of a database with regard to the newly created right against unfair extraction has been undertaken by the EC proposal for a directive on the legal protection of databases, op. cit. According to its Article 1(3) "insubstantial part" shall mean "parts of a database whose reproduction, evaluated quantitatively and qualitatively in relation to the database from which they are copied, can be considered not to prejudice the exclusive rights of the maker of that database to exploit the database" (emphasis added).
- 61 Whereas partial taking is quite a problem regarding textual material in digital format, computer programs are mainly concerned as regards interface information or single program modules, but hardly single lines or even signs of code.
- 62 See Articles 5 and 6 of the EC directive on the legal protection of computer programs, op. cit., and Articles 6-8 of the proposed EC directive on the legal protection of databases, op. cit.
- 63 WIPO Copyright 1992, 66 et seq., paras. 72 et seq. For discussion by the Expert Committee see Copyright 1992, 93 et seq., paras. 48 et seq. A similar rule affecting computer programs only was contained in Section 53(4) sentence 2 of the German Copyright Act, before it had to be modified following the harmonization process of the EC directive.
- 64 See Copyright 1992, 66 et seq., paras. 76 et seq., and for discussion, see Copyright 1992, 93 et seq., paras. 48 et seq.
- 65 Yet, it is questionable whether the proceeds thus generated would in fact compensate adequately for the losses incurred by mass-electrocopying. Similarly, a levy on storage media such as diskettes--comparable to the levy on videocassettes--would hardly seem possible. On the one hand, the sum to be collected in order to compensate for the loss of all protected material copied onto a diskette would by far exceed the sales price of a single diskette; on the other hand, contrary to a levy on videotapes, a levy on diskettes would somehow lack justification, since only some of the diskettes sold are actually used for copying copyrighted material, whereas the rest is used for storing the user's own material.
- 66 Report of the IFRRO Working Group 1989, p. 7.
- 67 Ibid, p. 11.
- 68 See IFRRO/STM Joint Statement on Electronic Storage of STM Material, Helsinki, September 24, 1992.

**THE UNIVERSAL ELECTRONIC ARCHIVE:
ISSUES IN INTERNATIONAL COPYRIGHT**

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1. Introduction

As we rush headlong into a new century, new technologies are remaking the media. The World Intellectual Property Organization has organized this symposium to raise the question: how should copyright lawmakers respond to digital technology? To answer, we need some perspective on what copyright is supposed to do.

After Europe adopted the printing press, royal powers tried to decide what was to be published. In 1709, the first copyright statute began to decentralize such control over the media, shifting it into the marketplace. Authors and media enterprises, armed with copyright, have since been thought more likely to make and market an increasing variety of works as broadly as possible. As such works move through the marketplace, they tend to leave more information and insight in their wake, feeding still further creation. Copyright is thus supposed to enrich the mental life of society.¹

We now have to focus on more powerful media than print. Digital technology can archive, and assist in transforming, works in all media. Telecommunication can network such archives, eventually hundreds of millions of them, worldwide. I would ask you to imagine universally networked archives, from which we could all easily access all prior works and into which we would input all new works. This is, of course, a media utopia, one which I invoke to concretize the copyright values I just broached. To approach this utopia with digital technology, I will argue, we have to refashion copyright.²

In this paper, I will move from the short- to the long-term, addressing the following issues along the way: for the time being, how may rights, now available internationally, be clarified with regard to digital technology? In the future, what type of copyright would best enable networked archives to constitute an open market for works? And what rights would best respond to the digital reprocessing of materials sampled from works? Finally, how might copyright and related rights concerning digital media be internationally coordinated?

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2. Beyond territoriality

At the threshold of analysis, we have to reckon with an irreversible process. Digital technology, coupled with telecommunication, is extending its reach worldwide. Since 1886, the Berne Convention, more than any other treaty, has assured copyright protection in the international marketplace. Do Berne principles provide us with starting points for copyright in a digital world?

The Berne Convention was founded in a world of live performances and hard copies. Indeed, the basic Berne principle of national treatment depends on the fact that such performances and copies appear at given points on this earth. This principle obligates each Berne country to grant the same rights in works from other Berne countries as its national authors would enjoy in their own works.³ However, before asserting such rights, claimants have to locate infringing conduct, usually unauthorized performances or commerce in pirate copies, inside national territories. Only then is it clear, under national treatment, what countries' rights are available against such infringement.⁴

By contrast, in networked archives, works may arise, and be accessed, worldwide all at once. Suppose that I collaborate through telecommunication media with authors who, scattered over five continents, create a legal reference work. Suppose, hypothetically, that this work is digitally stored in a database, and made accessible on-line throughout a telecommunication network covering these five continents, but without our consent, without paying us royalties, and without referring to us as authors. It no longer makes sense to localize the origin of this work, much less any conduct infringing our rights, inside the territory of any one country. The work is created, and made virtually present, throughout the entire network all at once, transcending national boundaries.⁵

The Berne Convention can respond to such cases on the basis of another principle, one supplementing national treatment, that of minimum convention rights. Each Berne revision has recognized new convention rights to control uses of works by way of new media, such as the cinema, sound recording, broadcasting, and reprography. Relative to uses of a Berne work by such media in any or all countries belonging to the same Berne Act, these countries have to implement protection at the level of the convention rights provided by this Berne Act.⁶

Since the same convention rights apply in all countries bound by the same Berne Act, they govern conduct wherever it takes place in any, some, or all of these countries. Thus, to the extent there are adequate convention rights concerning uses of works in digital media, the conflicts issue of territorially localizing acts that might infringe these rights becomes moot. This issue would then become, not which country's law provides rights, but rather where remedies are needed to vindicate them.⁷

3. Short-term clarifications

It is true that digital archives keep proliferating, within networks that keep growing. Still, for the next few years, we will not access works from these archives more frequently or more massively than we do, say, works in hard copies or broadcasts. During this time, we are not likely to reach a consensus on revising the Berne Convention, or formulating a comparable international instrument, to respond systematically to digital technology. We might better ask in this short term: how could a Berne protocol clarify existing convention rights with regard to digital media?

Some commentators suggest that Berne convention rights protect only specifically enumerated categories of works. Article 2 of the Berne Convention lists these categories in terms of established textual, audio, and visual media.⁸ Digital technology can nonetheless help to breed new types of works that do not fit comfortably within such categories. As a case in point, computer programs can communicate, like literary works, by way of written symbols, namely source code, but they can also generate audiovisual works on monitors. Programs for searching or organizing databases might incorporate criteria for selecting and arranging the contents typical of collections, but not include the contents themselves. Even traditional works can digitally jump categories: when a painting is optically scanned, its colors are coded and its composition in space is bit-mapped. The painting can then be translated into a musical work by artfully keying this information to tones and composition in time.⁹

Digital technology then puts into question how the Berne list classifies works. In response, I propose clarifying the function of the list: it should be deemed merely to illustrate the Berne term "literary and artistic works." Caught within more restrictive readings of this list, the drafters of Berne revisions had to recategorize cinematographic works earlier in this century, just as lawmakers seem compelled to do for computer programs at present.¹⁰ If, however, the Berne list were merely illustrative, legislators and judges would no longer need to squeeze new species of works into old Berne categories to justify extending convention rights to these works. Bear in mind that, in virtually all copyright systems, courts need only find a modicum of creativity in the media production at issue before qualifying it as a "work" protectible by copyright at all.¹¹ My proposal to reconstrue the Berne list amounts to making it sufficient to find a modicum of creativity characteristic of a given work, along with a Berne connecting factor for that work. Once these findings are made, the work should be protected, not only by national treatment, but also by Berne convention rights.¹²

Articles 9 and 11bis of the Berne Convention now recognize convention rights to control acts such as reproduction and broadcasting or cable-casting. We could construe these provisions broadly, deeming them to apply, respectively, to archiving works digitally and accessing them through telecommunication networks.¹³ These provisions nonetheless still incorporate old media notions: reproduction brings to mind printing or recording works to make hard copies; broadcasting or cable-casting moves works from central transmitters out to passive audiences. I therefore question the ultimate wisdom of trying to adapt Berne provisions to networked archives by giving definitional first-aid to such basic, but limited notions.¹⁴ To start, unlike "reproduction," digitally archiving a work need not only result in a hard copy that unchangeably mimics that work or occupies a given point in space. It can generate volatile copies at multiple terminals in a network, copies then easily reworked at these terminals into widely varying forms. Further, unlike broad- or cable-"casting," telecommunication can do more than transmit works from a central point outwards. It can move them from specific terminals to others within a network on demand.¹⁵

More particularly, the Berne rights of reproduction and broadcasting may be differently limited. On the one hand, the right of reproduction is susceptible of exemptions in "certain special cases" consistent with "normal exploitation" and authors' "legitimate interests." On the other, the right of broadcasting and cable-casting may be made subject, if voluntary licensing is not feasible, to compulsory licenses for "equitable remuneration."¹⁶

I question whether such licenses, at best arguably appropriate in some cases of broadcasting or cable-casting from central sources, make any sense at all in cases of telecommunication between individuals within a network on demand. Furthermore, it could prove difficult to apply both of these distinct types of limitations, that is, both special exemptions and compulsory licenses, coherently to networked archives as they increasingly constitute one media system.¹⁷

4. The long-term perspective

Over time, digital technology will become more powerful, transmission and processing standards more uniform, and networks more extensive. A harbinger of the future, the Internet already pulls local and far-flung networks together, linking diverse personal and institutional archives. The new media system, which we see developing, will be all the more capable of fulfilling the copyright aims of enhancing the variety and dissemination of works.¹⁸ Our utopia of universally networked archives contemplates eventual worldwide access to the wealth of all works. In the long term, how should copyright be internationally fashioned to this end?

Digital technology will reconsolidate the media which have proliferated since the invention of printing. It can store and communicate works originally created or ultimately enjoyed in textual, audio, visual, and even tactile media. Works will always be available, albeit with decreasing frequency, as hard copies obtained on the marketplace and as performances seen and heard in theaters or concert halls. There will nonetheless be less and less need to clutter up our files and shelves with printed matter, tapes, or discs, much less photocopies or recordings made privately from books or broadcasts.¹⁹ We will simply receive works on demand in digital form through telecommunication networks, and the works will then be played back on high-fidelity and high-definition multimedia monitors. I propose to consider this technology in terms of the entire media system that it is starting to constitute. In this or any media system, three levels can be distinguished, each corresponding to a specific right. There are, first, privacy rights, second, contractual rights, and, third, copyright.²⁰

At the first, most basic level, privacy rights entitle us to keep messages confidential.²¹ Not only may authors and media enterprises assert this right, holding back access to their works at will, but users of works enjoy it as well. Consider this example: once I buy a dictionary, I may refer to it, or show it to friends and colleagues, without accounting each time to the copyright owner. It is not just a matter of my property in the paper and print of the dictionary; more importantly, the law of copyright cannot justify intrusions on my consulting my personal library, nor on my communicating privately with my friends and colleagues.²² By the same token, the law generally may not force confidential materials, for example, undisclosed works or trade secrets, including raw data, to be made more readily accessible to the general public. At the second, intermediate level of this system, contractual rights may be negotiated among private parties to govern the communication of messages among themselves. A geophysical research service, for example, may contractually condition an oil company's access to its database on the company's waiving privacy rights. The service may then contract with the company to monitor the reproduction and retransmission of its research reports within the company.²³ At the third, top level, the open market, copyright entitles its owners to stop anyone from recommunicating works without consent. In speaking of copyright and related rights here, I mean only those rights, independently of privacy and contract rights.²⁴

Digital technology is changing the dynamics that draw works out of the private depths of the media system toward higher, more public levels.²⁵ When a literary manuscript remains in a desk drawer or a theatrical play is performed only for a select audience, neither work reaches the public at large. Until now, authors and media enterprises have made works public while largely relying on copyright to protect their interests in the marketplace. Digital technology now enables such private parties to keep works confidential even while transmitting them to large segments of the public, thus putting them in a position to contract for payment in exchange for code numbers or other keys to access the works. That is, to the extent we can encrypt or otherwise copy-protect digital messages, we can create technological "fences" around their contents, relying on the laws of copyright or privacy to ward off trespassers who attempt to break down these fences.²⁶ Previously, a producer of a costly motion picture, for example, might have staggered the release of the picture, by theatrically screening it first and selling it on videotape, or showing it on free television, later. By contrast, in the future, the producer might assure continuing high rates of return by foregoing the video release and only transmitting the picture over time through a pay-television service in encrypted form. Further, scientific, technical, and medical publishers might assure continuing returns by updating databases that their clients could only access upon the periodic payment of subscription fees. Note how reliance thus shifts from copyright, for example, protecting the videotape against pirate copying and marketing, to privacy and contract allowing the control of access.²⁷

A recent case illustrates how copyright and privacy issues are intertwined when works are transmitted in encrypted form. The BBC was relaying encrypted broadcasts across the English channel and had contemplated obtaining remuneration for these broadcasts in Continental Europe from the sale of authorized decoders there. In bringing suit against Hi-Tech, a company selling unauthorized decoders abroad, the BBC suggested, among its many arguments, that its broadcasts constituted confidential information, but the lower court replied:²⁸

"There is no confidentiality in the content of the TV Europe programmes as such; they are simply BBC programmes. The broadcasts are encrypted, but it is possible for Hi-Tech, and no doubt others, to decode the encryption. To do so is, in my judgment, no more a breach of confidence than it would be to decode a coded message placed in the columns of The Times. If an author chooses to place a coded message in a public medium he cannot, in my judgment, complain if members of the public decode his message."

This obiter dictum is misleading: to start, the right of privacy allows a party to control the communication of messages without regard to their content; it only loses force for an audience as the party relinquishes control for that audience. Further, just as a fence around land gives notice of claims of real property, encryption for an audience serves as a fence giving notice of claims of confidentiality, and the fact that people can climb over either fence does not undercut either type of claim. The decision of the lower court was finally reversed, albeit without deeper consideration of the privacy issue, but most importantly because British copyright law was held to provide remedies against the making of unauthorized decoders destined for use outside British territory.²⁹

To see beyond these legalisms, we have to ask: who will need copyright in this digital future? Authors and media enterprises will need copyright as a stop-gap for breaks in the fences of the new media system. These breaks will most notably take place when copy-protection devices are not fool-proof, not accepted by the public, or not adequately policed.³⁰ More generally, society as a whole will need copyright to attract works onto the open market, that is, out of private, or contractually restricted, channels of communication. The bait, of course, is the prospect of profits that copyright owners might maximize by disseminating an increasing volume and variety of works, rather than resorting to devices such as encryption to assure high rates of payment from select audiences. Indeed, the genius of copyright is that, decentralized among authors and media enterprises, it allows them to experiment with strategies so that, on the whole, they find those most appropriate for most broadly marketing the most diverse works to the public.³¹ For example, works could be sent, encrypted or not, via telephone systems; users, charged for access on their telephone bills, would pay these bills or lose all telephone service. More particularly, the producer of a motion picture might set a high price for accessing the picture on-line upon its first release, but decrease the price as the market is saturated. Similarly, scientific, medical, and technical publishers might differentiate rates of access to raw data from rates for receiving packages of data customized for clients on demand. It seems counter-productive to second-guess such strategies within networked archives by imposing compulsory licenses, with centrally fixed rates or other conditions of access. Originators of works and other media productions could stand on their privacy rights to restrict access if they found such conditions unacceptable.³²

To recapitulate, any new convention right concerning digital media needs to be both strong and flexible. Only then will it induce authors and media enterprises to release works from private into universally networked archives. A strong enough right would empower these owners to control the recomunication of their works through such networks. Some solution has to be devised for respecting both the privacy rights of all parties communicating through such networks and the copyrights in works they might recomunicate.³³ In any event, a flexible enough right would allow its owners, not central agencies, to control rates and other conditions of access.

5. Digital appropriation

I now come to the most difficult question: once users legally access a work, may copyright prevent them from sampling, reprocessing, and recomunicating expressive or factual materials from the work?

In digital archives, users need not read texts in any set sequence, but may follow references from any point in an entire corpus of works to another. Even hard copies include such references: to take one example, dictionaries illustrate definitions with sample sentences drawn from classic literary works.³⁴ Starting at one definition in a dictionary consulted in a digital archive, a user might move to, not only sample sentences, but the larger contexts of the works from which the sentences were taken. Hypertext programs allow users to follow such cross-references within the corpus of digitally archived works, enabling them more systematically and quickly to sample materials from these works. Further, tools for reprocessing such materials have long been used: for example, Roget's thesaurus has helped writers reformulate texts, and since the Renaissance drawing manuals have aided visual

artists.³⁵ Increasingly, computer-run text-, sound-, and image-processers incorporate such creative know-how, allowing users more thoroughly and easily to transform multimedia materials sampled from digital archives. Finally, hypertext programs allow users scattered throughout networks to collaborate more closely in creating works by revising each others' inputs.³⁶

Such digital sampling and reprocessing will increase the frequency of difficult cases that endemically trouble copyright law. Copyright in a work entitles its owner to control the exploitation of further works derived from that work, notably by translation or adaptation. The rationale of copyright nonetheless leads lawmakers to limit this right in those difficult cases at the margin between deriving and creating works.³⁷ Copyright is to induce the making and marketing of works that, by feed-back effect, fuel the creation of still newer works, thus enriching the mental life of society. It would be perverse to allow copyright itself to frustrate this entire process at the crucial phase where materials drawn from prior works are creatively transformed into newer works. To avoid this result, lawmakers distinguish between freely usable and protected materials in works, for example, between ideas, methods, and facts, on the one hand, and the original, expressive fabric of a work, on the other.³⁸ Still and all, only the courts give concrete meaning to such distinctions, for only they have to adjust the scope of copyright to assure authors of freedom of expression in hard cases. This jurisprudential truism suggests that no abstract convention text could provide workable criteria for determining just when digital sampling or reprocessing is permissible or not. Judges will also no doubt elucidate the deeper theoretical questions raised by such cases as they resolve the practical issues on which protection will ultimately turn.³⁹

The facility of digitally reworking prior works also puts traditional moral rights into question. The so-called moral right of integrity may serve as a basis for controlling the transformation of works, even where economic copyright does not. For example, one French commentator reasoned that Bizet's opera Carmen ought not have its integrity violated by showing the American motion picture Carmen Jones.⁴⁰ By parity of reasoning, the heirs of Prosper Merimée, who wrote Carmen on the basis of still older stories, could have prohibited Bizet from performing this later author's opera. If generalized, such reasoning could arguably preclude the wealth of all works that, created on the pattern of prior works, deviate from some "spirit" or "intention" that hypothetically once motivated these works. However, if the basic task of copyright law is to foster the creative process, it is contradictory for it to vest earlier authors with any such far-reaching right to limit later authors' creative options, in effect their freedom of expression. It also offends the spirit of liberal jurisprudence to empower judges to decide the aesthetic questions raised by claims based on such a right, for example, whether the "spirit" or "intention" behind a work is in danger. These observations hold whether or not we recognize the possibility that computer programs incorporating creative know-how may be authors or only that human beings creating or manipulating such programs may be authors.⁴¹

I will now add a proposal to those which other speakers have already offered concerning moral rights.⁴² I do so to provoke discussion of the question: should new moral rights, tailored for a digital world, supersede those which Article 6bis of the Berne Convention provides? I would ask you to consider a moral right to reference, one which would both amplify on the right to attribution of authorship and retrench on the right of integrity. On the one hand, the right to reference would require that any file digitally archiving a work include references to identify the persons who creatively contributed to the overall fabric of that work, along with their respective

roles. Such references already appear in motion pictures, for example, in the credits that customarily name the members of the creative team making the picture, as well as their respective job titles. On the other hand, this right would require that any file digitally archiving a work refer to such prior works as the authors of that work consciously transformed in generating its overall fabric. Hypertext search programs could then help users move from any work they are accessing back to other works by the named creators of that work or prior works transformed in creating it. Eventual retrieval of such further works presupposes, not only archiving all works in read-only form, but systematic cross-indexing of works accessible throughout a network.⁴³

This right to reference has overlapping rationales. To start, it would provide users with information indispensable for keeping track of the myriad works input into networked archives. Further, it would enable each of us to evaluate the aesthetic fate of older works when they are transformed into newer ones. Finally, it would reinforce the most perennial inducement to authorship, not money but glory.⁴⁴

6. A structural problem

Other rights can be elaborated to protect the interests that authors, media enterprises, and society will increasingly have at stake in networked archives.

Copyright protects creative works as vehicles for making raw data freely available to the public. This rationale is nonetheless not served by tolerating pirates who massively extract and reuse information from databases. The European Community is therefore to be commended for contemplating a right against such unfair extraction and re-utilization of data.⁴⁵ Such a data right would complement copyright which normally need not cover the factual contents of databases.

The EC data right illustrates a structural problem in the present system of international conventions. Either the data right, given its aim of combatting unfair uses of data, more often than not by competitors, would be internationally available as a right against unfair competition under Article 10**bis** of the Paris Convention, which protects industrial property. Or, in the alternative, the data right would be treated as a right related to copyright; on that premise, however, this right would not fall under the Berne Convention or, indeed, under any other existing convention. Instead, the data right risks being swept, like sui generis rights in integrated-circuit designs, into the ever-widening gap between the Paris and Berne Conventions, which were intended to come together in a comprehensive system protecting all intellectual property internationally.⁴⁶

Experience with so-called neighboring rights in audiovisual productions has shown that, when rights related to copyright are instituted outside the framework of the international conventions, they can prejudice copyright.⁴⁷ Consider a case of piracy of a foreign videogame in a jurisdiction where so-called neighboring rights are available for audiovisual productions lacking the creativity required of copyright-protected works: the court might be tempted to rely on these lesser rights rather than copyright to avoid a difficult determination of creativity. Suppose, in turn, that a party takes significant amounts of data from a foreign, digitally archived collection of data: a court might be tempted to recharacterize the old issue of copyright infringement as the new issue of unfair data use. There is no internationally binding convention concerning related rights in audiovisual productions or data: in either case, then, the court might evade honoring foreign claims.⁴⁸

Furthermore, a copyright to control on-line access to digital archives, one optimally free of compulsory licenses, would have to be carefully coordinated with any data right subject to such licenses.⁴⁹ The only solution to such issues seems to me to make copyright, with all of its related rights, subject to one overriding instrument.

7. Conclusion

I would ask you to take one last step back into the past before concluding about the future.

Before 1886, countries often governed their copyright relations by a primitive reciprocity. They in effect said to each other: "I will give as much protection to works originating in your country as you give to mine." Since 1886, the Berne Convention has only limited the principle of national treatment by applying this principle of material reciprocity in strictly limited cases. Its application also predicates reference to the "country of origin" of a work, which has been typically, but not uniformly, defined as the national territory where hard copies are first made available to the public.⁵⁰

Such territorial notions, of course, have no clear application to globally networked archives. Nonetheless, we now hear calls to resort to this approach to allocating rights in foreign works exploited through new media. Material reciprocity would only accelerate the balkanization of intellectual property: each right would receive different treatment between different pairs of countries. It is therefore inappropriate, I submit, to respond to media progress by regressing from national treatment back to this more primitive form of reciprocity.⁵¹

It is, instead, imperative to move forward by supplementing national treatment with more comprehensive convention rights.⁵² Ideally, an overriding international instrument would provide a seamless web of such convention rights in all media productions, including but not limited to creative works. Further, if simple and clear, as the Berne Convention has been, this instrument would not only state norms for copyright lawmakers, but a copyright ethic for authors, media enterprises, and the users of works worldwide.⁵³

In summary, I believe, international copyright has to be codified anew, as comprehensively, simply, and clearly as possible, to respond to the all-inclusive media system into which digital technology is now propelling us.

NOTES

- 1 For a critical analysis of copyright values, see Paul Edward Geller, *Must Copyright be Forever Caught Between Marketplace and Authorship Norms?*, in *Of Authors and Origins: Essays on Copyright* (B. Sherman & A. Strowel, eds., forthcoming 1993).
- 2 For a seminal analysis of this challenge to copyright, albeit one based on the now-obsolete paradigm of mainframe computers used for centralized data storage, rather than decentralized, networked archives, see Benjamin Kaplan, *An Unhurried View of Copyright*, 117-123 (1967).
- 3 See Berne Convention, Article 5(1) (Paris Act). For analyses of the scope of national treatment, see Wilhelm Nordemann, Kai Vinck & Paul W. Hertin, *Internationales Urheberrecht: Kommentar*, 55-57 (1977); Paul Edward Geller, *International Copyright: An Introduction*, at par. 5(4)(b) [hereinafter Geller, *International Copyright*], in *International Copyright Law and Practice* (P.E. Geller & M. Nimmer, eds., 1993).
- 4 See Eugen Ulmer, *Intellectual Property Rights and The Conflict of Laws*, 9-14 (1978). For borderline cases, see Paul Katzenberger, *Anwendungsbereich*, in *Urheberrecht: Kommentar*, 1207, 1244-1247 (G. Schricke, ed., 1987); Geller, *International Copyright*, supra note 3, at par. 3(1)(b).
- 5 For further analysis of the notion of territoriality in this context, see Paul Edward Geller, *New Dynamics in International Copyright*, 16 *Colum.-VLA J.L. & Arts*, 461, 466-467, 469-471 (1992) [hereinafter Geller, *New Dynamics*], also in translation in 32/8 *Copyright* 2 (1992) (Japan), 5 *Les cahiers de propriété intellectuelle* 391 (1993) (Quebec), and 1993 *GRUR Int.* 526 (Germany).
- 6 See Berne Convention, Articles 6**bis**-16 (Rome, Brussels, and Paris Acts). For analyses of the historical development of these rights, see Henri Desbois, André Françon & André Kerever, *Les conventions internationales du droit d'auteur et des droits voisins*, 15-64, 168-223 passim (1976); Sam Ricketson, *The Berne Convention for the Protection of Literary and Artistic Works: 1886-1986*, chs. 8-10 passim (1987).
- 7 For further analysis, see Geller, *International Copyright*, supra note 3, at paras. 3(1)(b)(ii)-(iii) and 6(1)(a); Geller, *New Dynamics*, supra note 5, at 470-473.
- 8 See Nordemann, et al., supra note 3, at 32-35; Desbois, et al., supra note 6, at 24, 27-28, 159-161.
- 9 Cf. Pamela Samuelson, *Digital Media and the Changing Face of Intellectual Property Law*, 16 *Rutgers Computer & Tech. L.J.*, 323, 332-334 (1990) (speaks of the "equivalence of works" that, "in digital form," defy traditional media categories).
- 10 For the changes in the Berne treatment of cinematographic works, see Desbois, et al., supra note 6, at 24, 38, 46. For the motives of the EC treatment of computer programs, mainly to assure Berne coverage, see Thomas Dreier, *The Council Directive of 14 May 1991 on the Legal Protection of Computer Programs*, (1991) 9 *E.I.P.R.* 319, at 320.

- 11 Copyright in the British tradition still largely represents an exception to this truism, although U.K. copyright is subject to EC constraints in this regard and U.S. copyright no longer represents an exception at all. See Paul Edward Geller, *Copyright in Factual Compilations: U.S. Supreme Court Decides the Feist Case*, 22 I.I.C. 802 (1991).
- 12 Cf. Arpad Bogsch, *The Law of Copyright under the Universal Convention*, 8 (3rd ed. 1968) (U.C.C. "enumeration is not limitative" and may include unnamed categories if these are recognized "by the custom of the civilized countries").
- 13 It has long been recognized that Article 9 of the Paris Act applies to "inputting" a work into a computer, although not that Article 11**bis** applies to computer "output." See Eugen Ulmer, *Copyright Problems Arising from the Computer Storage and Retrieval of Protected Works*, 8 Copyright 37, 53-55 (1972). It now seems clear that Article 11**bis** applies to transmitting a work within a telecommunication network.
- 14 See, e.g., Committee of Experts on a Possible Protocol to the Berne Convention, Report, 2nd Session, February 10-17, 1992, 28 Copyright 93, 98-99 (1992) ("reproduction" to include electronic "storage" of works). Cf. United Kingdom, Copyright, Designs and Patents Act 1988, par. 175 (definition of "publication" includes the "making the work available to the public by means of an electronic retrieval system").
- 15 We thus have to rethink basic notions of "communication." See Serge Proulx, *De la métaphore télégraphique à celle de la conversation: Représentations du pouvoir des médias et modèles de la communication*, in *Technologies et symboliques de la communication*, 283 (L. Sfez & G. Coutlée, eds., 1990) [hereinafter *Technologies et symboliques*].
- 16 For a critical comparison of the limiting language in Articles 9 and 11**bis**, see Paul Edward Geller, *Reprography and Other Processes of Mass Use*, 38 J. Copr. Soc'y USA 21, 30-31 (1990) and 153 R.I.D.A. 3, 29-33 (1992).
- 17 For further critical analysis of Berne limitations, see Péter Gyertyánfy, *Conflicts and Changes: The New Technologies in the Protection and Administration of Copyright*, in *WIPO Worldwide Symposium on the Impact of Digital Technology on Copyright and Neighboring Rights* (March 31 to April 2, 1993) [hereinafter *WIPO Symposium on Digital Technology*].
- 18 For a critical analysis of these trends, see W. Russell Newman, *The Future of the Mass Audience*, chs. 2, 5 (1991).
- 19 But cf. Gyertyánfy, supra note 17 ("human instincts" to own "material copies of favorite works and performances"). Of course, untold billions of dollars will turn on how the law treats hard copies while they become anachronisms.
- 20 For an analysis in terms of contract and copyright, see J.H. Reichman, *Electronic Information Tools--The Outer Edge of World Intellectual Property Law*, 17 Dayton L. Rev 797, 820-830 (1992) [hereinafter *Reichman, Electronic Information*], also in revised form in 24 I.I.C. 446 (1993).

- 21 See generally Stefano Rodotà, Protecting Informational Privacy: Trends and Problems, in *Information Law Towards the 21st Century* 261 (W.F. Korthals, E.J. Dommering, P.B. Hugenholtz & J. Kabel, eds., 1993) [hereinafter *Information Law*] (privacy develops from a right "to be left alone" to the right to control how, and to whom, one communicates).
- 22 See, e.g., Arthur R. Miller, Summary Address, in *WIPO Symposium on Digital Technology*, supra note 17 (privacy rights possibly violated by schemes to "track" the private uses and recommunication of works).
- 23 For examples, see John R. Garrett & Joseph S. Alen, *Toward a Copyright Management System for Digital Libraries* (1991).
- 24 But cf. Reichman, *Electronic Information*, supra note 20, at 825-829 (copyright policies might justify scrutinizing contracts that excessively limit access to works).
- 25 For an overview of the historical development of such media dynamics, see Geller, *New Dynamics*, supra note 5.
- 26 See generally Ejan MacKaay, *An Economic View of Information Law*, in *Information Law*, supra note 21, at 43, 51 ("fences" such as "cable, encrypting signals" result in "sufficient exclusivity ... to make exclusive rights viable").
- 27 Cf. Ithiel de Sola Pool, *Technologies of Freedom*, 250 (1983) (contemplates "serviceright, not copyright," that is, contractually governed service relationships, to protect the works and like materials delivered in "the electronic era").
- 28 BBC Enterprises Ltd. v. Hi-Tech Xtravision Ltd. (Chancery Division), (1992) 9 R.P.C. 167, at 183.
- 29 See *id.*, at 184-195 (Court of Appeals reversing), and at 195-203 (House of Lords affirming this reversal, on the basis of Copyright, Designs and Patents Act 1988, par. 298), especially at 202 (Lord Brandon noting that, if laws providing such remedies were limited to decoders to be used domestically, they could "readily be bypassed by decoders being made" in one country and sold in another).
- 30 See Gyertyánfy, supra note 17; Robert D. Hadl, *Digital Technology: A Critical Crossroad in International Copyright*, in *WIPO Symposium on Digital Technology*, supra note 17. Note that still other types of law may shore up such fences. See, e.g., Wagman c. Canal Plus, Cassation, ch. crim., March 23, 1992, 154 R.I.D.A. 145 (1992) (criminal law applied to domestic commerce in unauthorized decoders).
- 31 For a richly illustrated argument in favor of this genius of copyright, see Paul Goldstein, "Copyright": The Donald C. Brace Memorial Lecture, 38 *J. Copr. Soc'y USA* 109 (1991).
- 32 While copyright policies might impact on the contractual control of access, they do not seem clearly basic enough to affect confidentiality claims. Cf. Lear, Inc. v. Adkins, 395 U.S. 653, 675 (1969) (policies behind intellectual property preempt contract claims relative to disclosed inventions, but not necessarily those in trade secrets).

- 33 For example, how may the privacy of participants in the Internet be respected while policing the unauthorized recomunication of works through the Internet? For the present situation regarding software, see Shawn Willet, SPA investigates reports of rampant piracy on the Internet, Infoworld, March 22, 1993, at 12.
- 34 See generally George P. Landow, *Hypertext: The Convergence of Contemporary Critical Theory and Technology*, ch. 2 (1992) (explains how text may be elaborated into hypertext).
- 35 See, e.g., E.H. Gombrich, *Art and Illusion: A Study in the Psychology of Pictorial Representation*, 156-176 (1956) (use from sixteenth to nineteenth century of manuals illustrating patterns for anatomy, proportion, perspective, etc.).
- 36 See Peggy M. Irish & Randall H. Trigg, *Supporting Collaboration in Hypermedia: Issues and Experiences*, in *The Society of Text: Hypertext, Hypermedia, and the Social Construction of Information* 90 (E. Barrett, ed., 1989) [hereinafter *The Society of Text*].
- 37 See Paul Goldstein, *Adaptation Rights and Moral Rights in the United Kingdom, the United States and the Federal Republic of Germany*, 14 I.I.C. 43 (1983).
- 38 For a critical analysis of this distinction and functionally comparable doctrines in diverse copyright laws, see Ivan Cherpillod, *L'objet du droit d'auteur* (1985).
- 39 For an analysis of the "philosophical" questions, such as the nature of authorship and the work, which digital technology raises in acute form, see Thomas Dreier, *Copyright Digitized: Philosophical Impacts and Practical Implications for Information Exchange in Digital Networks*, in *WIPO Symposium on Digital Technology*, supra note 17.
- 40 See Roger-Ferdinand, *L'affaire "Carmen Jones,"* 8 R.I.D.A. 3, 21 (1955).
- 41 For papers discussing these alternative positions, see *WIPO Worldwide Symposium on the Intellectual Property Aspects of Artificial Intelligence* (March 25-27, 1991). For an argument that such positions need not constitute a dilemma, see Anne Cauquelin, *L'Oeuvre et l'Outil, A propos des images*, in *Technologies et symboliques*, supra note 15, at 365.
- 42 See, e.g., Gyertyánfy, supra note 17 (author's right to credit); Jon A. Baumgarten, *The Digital Use of Scientific and Technical Information*, in *WIPO Symposium on Digital Technology*, supra note 17 (editors' right to authenticity).
- 43 Cf. Patricia Ann Carlson, *Hypertext and Intelligent Interfaces for Text Retrieval*, in *The Society of Text*, supra note 36, at 59 (developing retrieval systems). But cf. Landow, supra note 34, at 185-190, 196-201 (resistances to universalizing hypertext access to the corpus of all works).
- 44 Cf. Walter Bappert, *Wege zum Urheberrecht*, 37-38, 113-114 (1962) (while classical Greco-Roman and modern European authors differ in overall motivation, both seek glory).

- 45 Proposal for a Council Directive on the legal protection of databases, May 13, 1992 (COM(92) 24 final-SYN 393).
- 46 See generally Jerome H. Reichman, *Legal Hybrids Between the Patent and Copyright Paradigms* (from a work in progress), in *Information Law*, supra note 21, at 325 (such hybrids fall into growing gap between industrial property and copyright).
- 47 See Geller, *The Proposed EC Rental Right: Avoiding Some Berne Incompatibilities*, (1992) 9 E.I.P.R. 4, 7-8.
- 48 On neighboring rights in audiovisual productions, see Paul Katzenberger, *Kein Laufbildschutz für ausländische Videospiele in Deutschland*, (1992) 7 G.R.U.R. Int. 513.
- 49 See, e.g., Proposal for a Council Directive on the legal protection of databases, supra note 45, at Article 8(1) (license for "works" not able to be "independently created, collected or obtained from any other source").
- 50 For an analysis of how it has become increasingly difficult to determine the Berne country of origin of a work, see Sam Ricketson, supra note 6, at 210-219.
- 51 For critical analyses, see Elzbieta Traple & Janusz Barta, *La Convention de Berne, traverse-t-elle une crise?*, 152 R.I.D.A. 3 (1992); Robert D. Hadl, *The Crisis in International Copyright*, 16 Colum.-VLA J.L. & Arts 427 (1992).
- 52 See Geller, *New Dynamics*, supra note 5, at 471-473.
- 53 For one statement of this ethic, see Ralph Oman, *Reflections on Digital Technology: "The Shape of Things to Come,"* in *WIPO Symposium on Digital Technology*, supra note 17.

**THE IMPACT OF DIGITAL TECHNOLOGIES
ON THE AUTHOR'S RIGHT AND NEIGHBORING RIGHTS***

by

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The emergence of digital technologies in France

The emergence of digital technologies attracts particular interest in France in different sectors of activity: R & D, industry, press and publishing, broadcasting and libraries.

From a technological point of view, French laboratories and companies play an important role in the perfection of digital technologies. The French company Thomson holds the basic patents concerning digital memorization in the form of minute pit, used in the manufacture of CDs. Thomson Consumer Electronics' laboratory has worked, since 1989, on the implementation of image and video compression and decompression algorithms, in accordance with the MPEG-1 norm. This laboratory already works on higher definition possibilities, such as 1440 x 960 pixels, destined perhaps to become an MPEG-3 standard. CCETT (joint France Telecom-TDF research center in telecommunications and television) set, within the context of the Eureka 147 project, the MUSICAM high quality musical compression standard, audio component of the MPEG standard which is the base of DCC and DAB. French experts equally play an important role within the ISO in the setting of new standards relative to multimedia (MPEG-2, MHEG ...).

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The views expressed are solely the responsibility of IDATE.

Translated from French by Michaël O'Mahony (IDATE-Leeds Metropolitan University).

From the industrial point of view, the principal French consumer electronic company, Thomson, is participating in the development of terrestrial digital television in the United States, within the context of the ATRC consortium, one of four applicants to have sought approval of a project by the FCC. The ATF-Gigadisc company is the sole independent manufacturer in Europe and one of the major suppliers of opto-digital discs. French companies (France Télécom, Thomson, Matra) are equally active in the field of material and software production for synthesis imaging and visual telephony. Thomson has just entered the field of virtual reality in acquiring the patents of the American company VPL, one being the already famous interface glove.

In the field of digital broadcasting, testing of the DAB is underway in France and other European countries (Germany, Great Britain). The first regular service, consisting of ten local programmes, will be assured in the Parisian region by 1994, with experimental receivers. A national set up is predicted from the beginning of 1996. Research of a possible European strategy for terrestrial frequencies is in progress within the European Radiocommunication Office (CEPT).

The prospects for the setting up of terrestrial digital television are less pressing in France than in the United States. According to STI/France Télécom, terrestrial digital television could begin in a standard television version, or an improved version in 1998, with a HDTV version on the horizon by 2002/2005. Canal Plus, the principal French pay-TV operator, is very interested in satellite digital television development and has set up a joint-venture with News International (main shareholder of BSkyB) in this area. The two large European satellite operators (EUTELSAT and the European Satellite Company) are presently clarifying their offer on this matter. France Télécom and cable operators are also attentive to recent developments announced by their American colleagues, in relation to the resorting to compression in order to multiply the number of channels available on cable networks.

The French publishing world is evidently anxious to establish a foothold in the field of electronic and multimedia publishing. French producers and directors are well positioned in the field of synthesis imaging and computer assisted cartoon animation. The annual Imagina conferences, organized by the INA (Institut National de l'Audiovisuel), have become one of the largest world meetings in this domain. Publishing on digital media (CD-ROM, CDTV, CD-I, Data Discman ...) is still weak in relation to what it is in the United States: out of more than 2,000 titles registered worldwide at the end of 1992, 118 were published in France. This relative lateness in publishing can be explained by the slow development of the number of applications (notably for the CD-ROM) and by the caution taken by publishers in developing the market for these media. Large publishers, however, affirm their intention to take an active role in this field, as innovators and not merely as transferees of rights in existing material. Numerous small multimedia publishing and electronic game design companies have also appeared. Several publisher specialized associations have been created (AFEE, CLEF, GAME). It is evident that authors' rights and neighboring rights are a matter of concern for publishers. GAME and the Syndicat National de l'Edition published in January 1993 a "White Paper on Legal Questions Relative to Multimedia Works."

The Ministry of National Education and Culture plays an active role in the encouragement and support of multimedia publishing developments, as has just been illustrated at the European Assises of Multimedia and Interactivity (Paris, January 21-23, 1993). The Ministry has launched two major fine arts data base projects: the NARCISSE project, supported by the European Commission, allows exchanges of digital data and reproduction of 18th century works between various European museums; the Videomuseum project is the storage on an interactive laserdisc of photographs and data on all the fine art works registered in French public collections.

Also, technical and publishing developments are equally the object of the European Commission's attention through different programmes: ESPRIT (R&D support), IMPACT (multimedia programmes conception support) and MEDIA (MEDIA Investment Club, dedicated to the development of programmes for new technologies).

The main cause of the feeble development of the number of applications for CD-ROM in France is related to the importance of networks, in terms of databases. France is particularly active in the development of publishing services on the Teletel network (better known as the "Minitel") which offers access to 18,000 different services, 3,000 of which are professional databases. On the other hand, several applications in the cultural field already exist on the ISDN Numeris. Among these applications, one may mention the Audiocatalogue system (help-to-sell system for compact discs introduced by FNAC, the principal French record retailer), as well as an experiment in municipal library access to the image bases on BPI videodisc at the Georges Pompidou Centre, and also services allowing newspapers access to the image banks of major photographic agencies.

In the field of application of digital technology to libraries, one could essentially mention the Bibliothèque de France's ambitious digitalization programme, which began in 1992, which forecasts the scanning of 300,000 traditional works, as well as making computer assisted reading stations available to researchers.

In the regulatory field, an important initiative has already been taken in order to take into account the appearance of new publishing forms. A new law has been adopted on legal registration ("dépôt légal") (Loi no 92-546, 20 juin 1992, J.O. 23 juin 1992) which broadens the obligation to register to include multimedia documents. An obligation to register was also established for software, databases, expert systems and other artificial intelligence products, as from the time they are made available to the public.

Concerning the influence of new technologies, and in particular digital technologies, in the field of literary and artistic property rights, strictly speaking, the Ministry of National Education and Culture's action concentrates on the establishment, in collaboration with collecting societies, of a study and research center for authors' rights and neighboring rights. The objectives of this center, the statutes of which are in the process of being adopted, will be the gathering of information, the preparation and follow up of research and studies, the publication of works and the organization of events, meetings and conferences.

The blueprint for this center has taken the form of completion of a preliminary study, carried out under the responsibility of IDATE, on the theme "The impact of new communication technologies on authors' rights and neighboring rights." This study aims to establish a census of new technologies likely to have an impact on authors' and neighboring rights, to gather analyses of the different professions concerned and to prepare the ground for legal reflection.

At present, a draft report is being examined by the Ministry of National Education and Culture's Office of Literary and Artistic Property, and is the object of consultation with professionals, in particular rights collection and distribution companies. It will not therefore be a question, at this stage of reflection, of presenting definitive results and a fortiori official proposals. Rather, it will present the main trends of thought as they emerge from the preliminary investigations.

The principal characteristics of digital technologies in the economy and the use of works

Through their diversity of specification and usage, digitalization and compression technologies present various characteristics which by their nature can pose, directly or indirectly, problems for the protection of authors' rights and neighboring rights.

In the field of publishing media, the major characteristic of digital technologies (optical discs family) or opto-magnetic (rewritable discs) is the capability to store audio, pictorial (fixed or moving) elements, text and software on the same medium. These technologies are of a nature therefore, which favours the development of multimedia products, which represent new expression and distribution possibilities and open new interesting markets for rightsowners. The characteristics of these may lead to a convergence around new publication, distribution and use modalities, the different "worlds" of the author's right: publishing, film and TV industry, music publishing and phonographic production, fine arts, photography and information technology. This convergence requires an examination of the continued viability of traditional concepts (division between rights of reproduction and communication to the public) and of the coming together of different administration practices (individual versus collective administration, scope of the limitation allowing quotations from protected works, ...).

Another characteristic of optical or opto-magnetic discs is more trivial: they are simply more durable than traditional media (vinyl records, magnetic tape). This facilitates, in theory, the generalization of rental and lending practices, which favor private copying and piracy. It has appeared necessary to European legislators to assure rightsowners the rental right. This question has been taken into consideration primarily by the European Commission, and on November 19, 1992, the Council of Ministers adopted the Directive on rental right and lending right and on certain rights related to copyright in the field of intellectual property, which established for rightsowners an exclusive right to authorize or prohibit.

In the signal distribution domain, digital and compression technologies permit the multiplication of services distributed by cable (Digital Instrument compression technologies for CATV, already adopted by TCI, the major U.S. cable operator; DMX for radio ...) rather than by the terrestrial method. The BBC laboratories have just demonstrated that the COFDM standard for terrestrial digital broadcasting, which has already completed its tests for digital audio broadcasting (DAB), can equally be used for an economic broadcasting (in terms of hertzian spectrum use) of television channels. Digitalization and compression technologies are therefore of a nature to increase the offer of programmes and to perfect the modalities of rights administration (systems for pay-per-view and for video-on-demand channels, etc.) and of marketing (for example, broadcasting of the same channel on several timetables). In opening new markets and new rights administration possibilities, digital and compression technologies open, in principle, when applied to distribution, interesting prospects for rightsowners.

One of the characteristics which most worries rightsowners is obviously that digital technologies allow large scale reproduction with a high image and sound quality. The broadcasting of radio or television programmes in digital quality obviously creates opportunities for private copying and piracy. Furthermore, the possible convergence of various digital technologies could modify the traditional notions of media. Determination of the form, place and characteristics of the first fixation of a work can become extremely complex.

The prospect of the pure and simple disappearance of the medium begins to be envisaged, not without trepidation, as a possible prospect for certain professions (notably the phonographic industry). The production function (which couples right administration with product exploitation) could find itself fundamentally modified due to the dematerialization of the distribution of works.

The consequences of this trend towards a dematerialization of exploitation can hardly, at this stage, be determined in any way other than by hypothesis. The history of communication technology shows that distances are sometimes very large between the purposes of these technologies imagined by their promoters and the actual use of them by consumers. In terms of cultural consumption, public practices are not solely guided by economic and technological criteria. The success of the video testifies that a style of network distribution (television) has not killed, but has, on the contrary, facilitated the emergence of a prerecorded product-based distribution (home video). It seems that material possession of cultural media (books, records, videocassettes, etc.) is destined to maintain an important role in symbolic and emotional representations of large consumer sectors. In other respects, from the publishing strategy's point of view, the evolution of competition in the United States between the video and pay-per-view markets indicates that producers' choices are essentially determined by the possibilities of rising revenues and the margins attainable in minimizing the number of intermediaries. Now, on this point, it seems likely that a pay-per-view strategy will eventually turn out to be more profitable for producers than a prerecorded product distribution strategy.

Coupled with progress realized in the software and expert systems fields, digital technologies allow the development of computer aided design (CAD) or computer controlled design (CCD). In the creation domain, it gives rise to new possibilities, notably in the fields of music creation, computer graphics, cartoon animation, and virtual reality. These increased possibilities bring up again the traditional questions on the role of the aleatory and protection of algorithms and of their influence on the expression of the author's personality.

Digital technologies and the evolution of information technology towards multimedia offer the image and sound control field possibilities which seem unlimited in the future. These possibilities can lead to some original forms of creation (such as, for example, the resorting to special effects, particularly spectacular in some recent film productions). However, the possibilities are not without risk for rightsowners, from the point of view of economic rights and of the moral right. Apart from authors, these possibilities can also concern performers. The production, at normal costs, of fictional films with clone actors is becoming a reality, as the production process of an adaptation of Jules Verne's "20,000 Leagues Under the Sea" illustrates, where the actor Richard Bohringer allowed himself to be scanned. Technically, scanning a single actor could allow the production of an unlimited number of films. In the music field, the practice of sampling (an extremely precise excerpt of an audio element in view of its reuse in another work) promises to develop, and it is interesting to note that 14 lawsuits (the majority of which were resolved amicably) have been filed in Great Britain. The question of the respect of rights is going to become much more important as scanning technologies become commonplace and accessible to both individuals and companies.

Digital technology equally favors the development of interactive technologies which are evidently going to have important consequences on the ways in which works are used. However, one must note that it is probable that the majority of works which will be offered to consumers on interactive media, such as CD-ROM or CD-I, will have been developed using this interactivity.

Digital technologies strengthen the internationalization of production and circulation of works

In the context of the WIPO conference, it appears necessary to underline the fact that digital technologies strengthen the internationalization of the production and circulation of works.

The emergence of optical scanning, electronic publishing and of multimedia is often compared to the revolution in the 16th century which brought about printing. The Canadian communication sociologist, T. Innis, followed by Marshall MacLuhan, developed the theory that the invention of printing favored the emergence of nationalism. One can argue, on the contrary, that the technological revolution attributed to digital technologies appears to accelerate the internationalization of information and culture to which telecommunications, cinema, record, radio, television and video are certainly already used to, but which are going to find themselves magnified by new media and networks. It would not be fruitless to recall that the characteristics of digitalization and compression indeed necessitate reflection on an international scale, on their implication for authors', performers' and producers' rights.

Firstly, one should note that optical scanning technology will enable the discovery of media relying on a universal standard not just in the field of sound, but equally in that of image. The relative dividing up of the markets which had brought about the existence of three norms (NTSC, PAL and SECAM) as much for television as for video and videodiscs, finds itself surpassed by the appearance of the CD-I and by the probable arrival on the market of the full motion video CD (CD FMV) and the digital videorecorder.

Compression technologies are also going to encourage new forms of international communication. Thus radio digital technology (DAB) opens up the possibility for international radio services, broadcast by satellite, of a quality--and therefore probably of an audience--far superior to those of traditional short wave services.

Furthermore, the international compatibility of ISDNs and the development of satellite telecommunication networks are already resulting in the occurrence of a certain number of delocalization phenomena at different stages of the work's fixation, reproduction or representation. Telecommunication networks are beginning to be used in international collaboration between scientific researchers or between designers. In this case, the determination of the applicable national law can turn out to be important.

The emergence of digital technologies will not only modify the conditions of circulation and exploitation of works: it has already had some important consequences on the internationalization of the three industrial sectors converging towards multimedia: telecommunications, information technology and the culture industry (intended, in a large sense, as including publishing, phonographic production, film, TV and home video sectors and even the fine arts). The two sectors which concern intellectual property protection (those of the culture industry and information technology programmes) are already strongly internationalized. In particular, the level of investment in the production of films, TV programmes or multimedia works increasingly necessitates international coproduction, and this trend will continue to grow in strength. The growing value of works, resulting from an increase in demand, creates international concentration phenomena in the form of the setting-up of rights libraries.

This strengthening of the internationalization of production and circulation of works resulting from the emergence of digital technologies necessitates, inevitably, the examination of international solutions.

The trends of legal thought

The reactions of numerous professionals to the emergence of digital technologies and media often convey a sense of concern in facing what would be a legal void. The IDATE team considers that there are no grounds for exaggerating this: the major principles of traditional copyright, in its continental form, have integrated without too much trouble the different reproduction and broadcasting technologies dating from the 19th century onwards and will have to, on the whole, continue to be pertinent for digital technology.

Affirming the durability of traditional principles can not, however, lead to an ostrich's attitude, which would refuse to take into consideration the important effects which digital technology can have. Moreover, a policy making reference to these principles or being based on them, can be the means to finding a solution truly adapted to a new problem.

1) Conditions for the protection of authors' rights

New technologies raise again certain old questions on authors' rights, the importance of which there are no grounds to overestimate (the role of chance in creation, the role of interactivity). On the other hand, new technologies, notably because they always bring more intellectual activities into market reasoning, contribute to the setting down of the key notion of originality, and can lead to calling into question of the author's preeminence. The insertion into the author's right of the protection of software, of certain media programmes and of databases (under examination at the moment in a directive project by the European Commission) must not alter the notion of originality of a work linked to the literary and artistic dimension which presided, in France and the majority of European countries, over the emergence of authors' rights. The importance of this question has been appreciated in the Community Directive on computer program protection.

Moreover, an evolution too oriented towards protection of investment rather than protection of creation would risk changing the nature of the literary and artistic property right, pulling it towards the competition right.

The existence in French law of special rules applicable to certain works (software, film and audiovisual works and most probably in the near future, databases) leads certain professionals to practice a nominalist approach, aiming to relate the new work forms (in particular multimedia publishing products) to such and such a category. In order to be legitimate, this approach cannot be classified as a principle of reflection: not only does it risk questioning the basis of protection of the author but above all, it risks leading to artificial distinctions which would not be operational in facing the growing diversity of technological possibilities. The same work could, for example, be classified at the same time as software, a media work and a database, thus making it all the more difficult to determine the rights pertaining to it.

2) The exclusive character of the rights

Generally, it appears that technical progress threatens the rights' exclusiveness for practical (difficult to control its use), legal (incidence of competition law in the name of public interest) and political (pressures exerted by the users and legislators to limit the exclusive right in the name of the right of access to culture) reasons. At the same time, certain categories of rightsowners, notably phonographic producers and actors, who believe themselves to be threatened by certain digital technologies have just demanded an advantageous exclusive right.

The sliding of the notion of an exclusive right towards a remuneration right would risk calling the nature of the authors' rights into question, in disconnecting this from the exploitation of the work. This risk is all the greater for, in resorting to costly technologies, the author finds himself more and more often in the situation of an employee.

3) The structure of economic rights

Digital technology is characterized by growing complexity of systems (multiplication of computer and interface peripherals, couplings of published media with networks, book publishing from HDTV pictures ...). This process stands to modify considerably the conditions of exploitation and to blur the contours of the summa divisio between reproduction and communication to the public. Are the notions of reproduction and communication to the public still adequate for immaterial product communication? Nevertheless, this traditional distinction is not destined to disappear and will still have to play a large role, even if it can be necessary sometimes to complete it. If such is the case, the establishment of certain distinct rights, such as the right of distribution, initiated in the "computer programmes" and "rental and hiring" directives, should be taken into consideration.

4) The moral right

Digital technology considerably increases the manipulation possibilities of works and performances (special effects, sound work, etc.). The fact that the consumer himself can, during his free time, instigate such manipulation carries evident risks of infringement of the moral right. This risk will be greatly increased during the creation of any product which can be distributed or commercialized. It is clear that French jurists and a large number of French professional circles remain faithful to the traditional notion of the moral right. In particular, the colorization of feature films without the consent of the director is considered as unacceptable.

5) Administration modalities

It seems inevitable that new technologies will enlarge the field of application of collective administration. The high memory capacity of digital media make possible the publishing of encyclopedic type works, regrouping works from widely varying origins. For certain types of right negotiations, the possibility of user access to rightsowners will make it necessary to resort more often to collective administration. One can cite as an example the case of the Videomuseum project, which allowed the compilation on interactive discs (non-commercializable but consultable on a limited number of sites) of a database comprising reproductions of works of fine arts found in public collections. This project was made possible by an agreement with the two collecting societies specializing in the rights of draftsmen and sculptors.

Such a prospect nevertheless poses important practical problems: certain barriers (between authors' rights and neighboring rights or between musical work and film or audiovisual work, etc.) could break down. It is probable that an increase in cooperation and agreements between collective administration organizations managing rights in different works or in different countries will be necessary in order to facilitate user negotiations. There will always be the risk that rightsowners are not members of a society or that the representativeness of collection and distribution societies is not perfect.

The development of price lists applicable to the new media or uses (such as corporate communication, destined to become one of the markets for multimedia technologies) already constitutes food for thought for collecting societies. The internationalization of the circulation of media permitted by standardization will increasingly require that price lists take international sales potential into account.

The use of technology for the protection and administration of authors' and neighboring rights

Often perceived as a threat to literary and artistic property rights, digital technology can, however, be used to such ends as the protection of these rights.

The insertion in the subcode of CD-audio, of the ISRC code and of the SCMS system provide a first illustration of the possibilities offered. The ISRC code and the SCMS system would have to carry some elements of response to the concerns of authors, actors and producers facing the emergence of digital broadcasting (such as DAB or DMX). These systems facilitate collective administration (ISRC code) or avoid the multiplication of copies from the same recording. Still, it is an imperative that the imposition of such systems be implemented within the context of industrial agreements (such as the Athens agreement) and, if necessary, by international regulations.

The CITED project (Copyright in Transmitted Electronic Documents) launched in the context of the European Commission's ESPRIT II programme, is dedicated to these questions and the first conclusions were presented at the end of 1992. This project aims to establish:

- a model for the protection of authors' rights revolving around digital information; this model must be capable of surveying protected digital information;
- corresponding orientations;
- technical tools allowing the application of this model to specific sectors. Some of these tools are the same as those used in the security industry. However, the objective pursued is to protect the information dependent on an author's right, without which this protection does not restrict legal access to the information.

Ms. Laurence Guédon's (APP) paper on the possibilities of a protection system in the information technology field equally indicates the shift of work in this direction.

One cannot neglect the possibilities offered by coding and access control systems. In France, the first generation of decoders used by the Canal Plus channel turned out to be relatively simple to pirate. But the growing sophistication of access control systems (generally using keys or smart cards) offers increased guarantees against piracy, right from the signal's emission. Furthermore, their possibilities of addressing allows the creation of new markets, and devices assuring a precise payment according to the broadcasting zone's limitation and marketing strategies taking account of actual subscriber consumption.

Conclusion

For the electronic consumer, telecommunication and information technology industries, plus different sectors of the world publishing industry, digital technology represents important new opportunities. It is obvious that new media and network success will not come solely from their technical qualities, as the existence of a program offer constitutes one of the major prerequisites for the industrial success of these new technologies. At present, production of programmes for these new media necessitates important investment, more risky than the development of the player base, indeed the durability of the product itself is not assured.

In this context, certain new media promoters could be tempted to pressure the legislator into reducing the protection which producers and actors enjoy. Without giving way on principles, they can, if they judge it appropriate, make contractual agreements with publishers and producers taking account of the necessity to ensure the commercial success of these new media. Thus, at the launching of new audio media (CD-audio and, more recently, DCC and Mini-Disc), phonographic producers and authors/composers agreed to reduce the level of rights over a transitional launch period, in view of the promotion of these new media.

Commercial imperatives cannot justify calling authors' rights into question. At a time where the emergence of new reproduction and broadcasting technologies can lead to an appreciable evolution of the balance between professions concerning authors' and neighboring rights, caution arises.

Balanced solutions must be found, tactfully treating commercial interests and respecting a cultural policy where works of the mind are not considered as mere commodities. It appears evident that the majority of French jurists and professional circles remain faithful to the continental civil law concept of authors' rights. At the same time, they are aware that a protection system should not constitute a handicap for publishing activity which could in the long run be favorable to the publishers or producers of countries where authors are less protected.

The role of the legislator, confronted by a variety of sometimes contradictory reasoning, is to carry out choices which assure an equilibrium between the different interests. Without predicting their future choices, one can assume that the French public authorities will continue to promote the research of international solutions which take into account principles implemented in countries applying the continental idea of authors' and neighboring rights.

**COPYRIGHT AND DIGITAL TECHNOLOGY:
CONTINUITY AND PROGRESS**

by

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Introduction

In opening the Symposium, WIPO Director General Arpad Bogsch told us to consider the extent to which it is necessary to revise the existing copyright system to deal with the challenges posed and the opportunities presented by digital technology. Fortunately--for me at least--this Symposium was less concerned with the details of digital technology as technology than with its impact on intellectual property. The truth is that my skills are so limited that my sole utilization of technology is that I use my office computer to maintain my wine list.

Not surprisingly, the participants did not agree upon definitive measures to meet the challenges of digital technology to today's copyright regime. But the papers, presentations and discussions did, I believe, shed some light on the themes and underlying tensions in this area, and brought us closer to the center of the problem. I hope that this will benefit those who carry the responsibility of making or revising intellectual property law, such as the Committees of Experts meeting in Geneva this June and July to discuss a possible Protocol to the Berne Convention and a proposed "New Instrument" for the protection of the rights of performers and producers of sound recordings.

As is usual in copyright discussions and elsewhere, there have been disagreements among participants. But except among lightning bugs and fireflies, there is rarely any light without the generation of some heat. But the magnitude of the expressed concerns is surprising. Just what is it about digital technology that can make normally placid lawyers, business people, and creators fear the end of the copyright regime as we know it? What can render what we might call self-confident creators and owners of intellectual property suddenly so anxious and fearful?

* This paper is an edited version of the Summary Address delivered by the author at the WIPO Worldwide Symposium on the Impact of Digital Technology on Copyright and Neighboring Rights on April 2, 1993.

There are several possibilities: first, as always, there is the fear of the unknown. There is a persistent mistrust of what appears mysteriously menacing, or at least a mistrust of a technology more powerful than the last one that we mastered. There is, to borrow a phrase from H.G. Wells, a concern about the shape of things to come--things that now are barely discernible and hardly comprehended. Many of us share a cautious, conservative dislike of change and perhaps to some extent, at least in my case, an old fogey's disdain for the new. Indeed, it may be that distrust of high tech developments is largely a generational phenomenon. Our children accept as ordinary that which seems to us astounding--much the same way that we take radio and television broadcasts for granted but our parents and grandparents did not.

As I have already intimated, I am not what Americans call a "techie," but at least I'm in good company: David Souter, another Harvard Law School graduate, who sits on the United States Supreme Court, writes his opinions out in long hand. He only recently acquired his first television set, and he does not have a VCR. Along those same lines, when I was arguing a case in the United States Supreme Court a few years ago involving the question whether one of our States, Illinois, could assert jurisdictional power over thousands of people all over the United States, I saw my good friend Arthur Levine sitting in the courtroom just before I got up to address the Court in rebuttal. Since Arthur was Executive Director of CONTU when I served on that Commission (and my mind works in strange ways), as I turned to the Justices I said, "what this case is about is whether the State of Illinois can behave like a giant 'Pacman' and go running around the country gobbling up people." Justice Rehnquist roared with laughter, and out of the corner of my ear I heard Justice Brennan turn to Justice Marshall and say: "What's Pacman?" I guess it was technological (perhaps generational) discontinuity.

I entered the Victorian halls of Harvard Law School 35 years ago armed with a notebook, a textbook, and a fountain pen. Today, each year when our new class arrives for orientation, over 90 percent of them have PCs. They are immediately introduced to our computer and audiovisual laboratories, which have rendered obsolete much of our two-million-volume library. Indeed, 25 percent of it is now in what is euphemistically called "dead" storage.

Another reason for unease about digital technology stems from the fact that the changes that technology is bringing, and will bring in the next few years, are nothing short of a revolution. The perfect reproduction of musical performances through digital technology already has prompted millions of music lovers with vast record and tape collections to switch to CDs. The digital storage and retrieval of all types of works make feasible multimedia productions on a scale and in varieties previously unheard of. Digital density, ease of reproduction, virtually instantaneous and ubiquitous distribution, and the capacity to transform our concepts of authorship take the breath away.

Finally, we are confronted by the fact that even changes that are unquestionably beneficial to society in the aggregate can hurt certain groups. Though we may take comfort in the knowledge that society has on most occasions adapted successfully to changes that seemed overwhelming, we also have to recognize that not all people see all changes as for the better.

Think about the Luddites, who are frequently referred to in this regard. A century and a half ago the Luddite home weavers tried to smash the machines in the new textile mills of the industrial revolution. Think too of an itinerant portrait painter with middling skills in the mid-nineteenth century, contemplating the implications of the first photographic portraits. More to the point of our deliberations in this Symposium, consider the copyists in early modern Europe examining some of the first books printed from movable type. Surely they felt threatened. These groups and others all confronted genuine dangers to their livelihoods. Quite naturally, some of us fear that we may be the twentieth-century versions of these groups. How many of even the best CDs, for example, would consumers likely buy if almost effortlessly they were able to make perfect copies of the same music from digital broadcasts or cable transmissions?

So, for some, the sky is falling. The reality is that throughout the history of civilization, the sky has always been falling in some respect or other. The fact that we have persevered and prospered is comforting, but it is not a complete answer or a justification for passivity, however. The historical lesson is small comfort to the fellow left standing in the rain without an umbrella. Clearly, some protective garb is needed for some.

Summary

So much was said at the Symposium that summarizing it is intimidating. I will not attempt to reconstruct it point-by-point, or presentation-by-presentation. Rather, I will describe the major themes that emerged over the course of the three days, giving appropriate credit whenever possible.

I. Evolution versus revolution

Howard Knopf introduced the phrase "evolution versus revolution" into the discussions, and this in some ways was the dominant theme of the Symposium. The speakers, by and large, seemed to be in agreement that there is no need to modify the basic philosophy and principles behind the existing structure of copyright. Morton Goldberg pointed out some of the problems of trying to go outside the existing framework to reinvent the wheel. In the same vein, United States Register of Copyrights Ralph Oman referred to copyright as "historically unique, socially revolutionary, and worth fighting for." He and Jon Baumgarten said we should reaffirm the fundamental purpose of copyright and keep the author at the center of the copyright universe. Register Oman, to me quite interestingly, also said that we should not see our task as planning a new regulatory future. Instead, we should bring the digital environment under the control of the author and thus keep copyright the valued servant of authors' rights.

In the discussions, evolution seems to have prevailed over revolution. Nonetheless, there was a popular feeling among many participants, such as Jason Berman and Bruce York, that the copyright regime is lagging behind the state of the art. In this country, at least, that is always an accurate picture of the law. For us, law is generally reactive. As a result, many of the speakers also considered the need for changes in regulations and the scope of rights and means of protecting them under copyright.

Thomas Dreier and others asked, and attempted to answer, broader questions such as:

- do we need different rights for analog and digital technology?
- are the already existing rights affected by the format in which information is contained?

Not surprisingly, therefore, throughout the Symposium, there were discussions of which rights, if any, are to be changed:

A. Reproduction right. Certain speakers admonished that serial digital reproduction of perfect digital audio recordings should not be allowed freely even for private purposes. Mr. Berman suggested that levies on private copying are a necessary, but by no means complete, solution to the threat posed by digital technology to the revenue of composers and other authors. Nicholas Garnett noted that when digital technology begins to offer more and more services to the consumer, private copying will experience a short-term rise, but eventually may subside or at least level off. Several countries are in fact considering draft legislation that would preclude the making of more than one generation of digital copies.

B. Distribution right (including the rental right and public lending right). Some countries are revising the "first sale doctrine" by adopting new laws providing for the survival of the rental right after the first sale of copies of works when the rental is an important means of exploitation--for example, computer programs, audiovisual works, sound recordings. Some speakers suggested that the public lending of digital copies may unreasonably prejudice the legitimate interests of copyright owners. Register Oman noted that enterprises that depend on distribution consider it imperative that these distribution rights be recalibrated in the face of digital technology.

C. Other rights of communication to the public. Another subject that drew attention in this context is the reformulation--but not the fundamental revision--of the broadcasting right, the right of public performance, and the right of communication to the public. Some suggested that it is necessary to reconsider whether or not it is justified to grant certain rights to restrict any of these means of making works available to the public, and whether such rights should turn on whether the work is made available in digital or analog form.

D. New rights. Participants spoke not only about the need to retool and reconsider existing rights, but the possibility of creating new rights as well. In this context, several participants, including Mr. Garnett, mentioned a right that has been debated in this country for a half century at least: the performance right for sound recordings in all of its manifestations. Some participants also spoke of a proposed right of unfair extraction in the context of direct broadcasts via satellite. Obviously, considerable attention must be devoted to the legitimacy of claims that these new rights should receive formal recognition.

II. Declining profitability may chill creativity

Some people talked about what they called the "chilling" effect of digital technology. We heard that declining profitability of traditional media in the face of easy copying and easy access is, to appropriate an American phrase, a clear and present danger--given its potential chilling effects on creativity. Also we heard that traditional broadcasting has made only trivial amounts of money for rightsholders, so that, if digital transmission replaces sales of recordings, the main source of income for the rightsholders will evaporate. This sentiment naturally lead many participants to advocate recognition of some of the new rights just discussed.

III. History counsels caution

Another theme sounded in the Symposium was the invocation of historical experience in order to urge caution. That, of course, is consistent with a heavy emphasis within the group on evolution rather than revolution. David Baron argued that digital technology is evolutionary in terms of copyright even though the technology itself is revolutionary. Mr. Goldberg pointed out the ability of our system over centuries to absorb new technologies, such as motion pictures, sound recordings, television, computer programs, cable, and many others.

Some speakers acknowledged that, in spite of the successful absorption of new types of authorship in the past, digital technology nonetheless posed significant classification problems. On the other hand, Mr. Goldberg pointed out that a traditional illustrated book is a classification problem, as are many other non-digital works. But there was some sense among the participants that we would have to rethink classification, as well as other aspects of copyright terminology. Dr. Bogsch spoke of the fact that the term "fixation" and "reproduction" may not be accurate when speaking of sound recordings. Dr. Zhen also raised the question whether "fixation" is really a meaningless concept in a world of digital works. Register Oman said that the rhetoric surrounding authors' rights becomes more and more irrelevant when we talk instead of compulsory licenses and equitable remuneration.

This need to rethink semantics and concepts, however, is not a new phenomenon in the United States. During the debates over the revision of the Copyright Act in the sixties, several witnesses, who shall remain nameless (but who include the Symposium summarizer), asked the Senators and Congressmen to consider whether or not the concept of "copy" made much sense in a world in which the economic value of many works of creativity lay not in copying them but simply in using them.

IV. Technological approaches to protection

The next theme--a very interesting one, at least to me--was the notion of using technology to meet the threat of technology: put differently, technology itself may have within it capabilities that can enhance the protection of works. If the sky is falling, people seem to agree about digital technologies' potential to provide some of the protective garb we need. People spoke of transaction-based services, encryption, and metering as waves of the future. Mr. Baron ominously warned to watch out for claims by some of national security as a possible lever of control over the emerging systems.

Although nobody mentioned it, these approaches have implications for another field of law in which I have a great interest: the law of privacy. Encryption, metering, and surveillance of use pose enormous threats to personal privacy. Americans will remember how our press people secured computerized records of the video rental habits of a recent nominee for the United States Supreme Court. (A federal statute was enacted to prevent it from happening again.) So, if we start metering utilization, we may be looking at the world's largest threat to personal privacy. We must bear in mind, though, that the information-entertainment systems of the future will produce an informational resource that can be used not only for valid purposes, but for invalid purposes as well. Thus, it is not amiss to suggest that technological protections, administrative solutions, smart cards, and the like should not be considered.

V. Recalibrating private arrangements

Perhaps the most dramatic theme of the Symposium was the need for new private arrangements and structures. Indeed, as an outsider to the hurly-burly world of the marketplace in which copyrighted works are bought, sold, and licensed, I found the most striking aspect of the discussions to be this call for those who are in that marketplace to devise new private arrangements to take account of the appearance of digital technology. The challenge was crystal clear--the assembled participants, probably more than any other group, had to take it upon themselves to start the process of retooling the way they each do business with each other.

Again, people did not speak with one voice. Some pointed out that efforts were underway, while acknowledging that it had to be done diligently. Some had a greater sense of urgency, implying that the Titanic has been struck and is sinking fast. Charles Clark, for example, argued that there will be no time later to work out these informal relationships and that something must be done in advance of the emergence of the problems that inevitably will arise. Others urged a more deliberative pace: we must walk before we run. We can do it, but it will take time, energy, and good will.

VI. Moral rights in a digital world

Interspersed with that discussion was considerable attention to moral rights. On the initial day of the Symposium, for example, one of the first questioners, Joseph Alen, stumped the panel by asking: "In a world of digital, can moral rights survive?" As if to emphasize the centrality and difficulty of the question, Dr. Bogsch responded with another question: "Can a producer have a moral right?" The implication was: "Who cares if moral rights are going to disappear?" On the other hand, if moral rights are to survive, Dr. Bogsch's question is a sound one. Not only must we figure out the way of preserving moral rights, but we must figure out, or at least rethink, who is entitled to moral rights in a digital world.

One speaker pointed out that arguably it was necessary to restrict the author's existing right to withdraw his work, in other words, to devise anti-moral rights--in the light of the fact that withdrawal of a work could have enormous significance in developing countries. Beyond that, Brian Kahin pointed out the ability to withdraw a work absolutely ran counter to the multimedia character of many digital productions, because the producer must line up "upstream rights with downstream intentions."¹ This theme is obviously in tension with the theme put forward by Mr. Oman and others that the author should maintain control of his or her work even in a digital environment.

VII. Economic implications

Finally, Paul Geller stated in his paper that the telecommunication networks increasingly transcend territorial borders. As a result, we are in a worldwide market for many copyrighted works. We know we are at a technological crossroads. Some speakers--Messrs. Hadl, Baumgarten, and Berman--indicated that not only are we at a technological crossroads, but we are also at a crossroads for possible economic protectionism by substituting the principle of reciprocity for the principle of national treatment. A number of speakers found reciprocity to be a disturbing problem, but there was no resolution. The stakes, the immediacy, the impact of the question in the worldwide marketplace for digital products--all these make graphic that it is a problem on which we need worldwide collaboration, which means it is a problem that calls for attention in the short, rather than the long, term.

Concluding observations

One blessing in being a summarizer is not being burdened with any obligation to offer answers to the extraordinarily difficult questions posed by the participants. I will, however, arrogate to myself the prerogative of just a couple of observations. **First:** In this Symposium the participants and observers were able to learn more than we knew before, not only about the technology, but also about the implications of what we and others are doing with the technology--implications critical for that close business collaboration that we call the global economy for copyrighted works. We also were able to learn about the imperative of trying to embrace works in digital form as the newest member of the family of works protected by copyright. Not only must we embrace these works, we must do so with a minimum of disruption. That's really the charge: how do we do it with a minimum of disruption?

¹ It was never clear to me which was upstream and which was downstream, but you have to line them up, and you can't line them up if everybody is going to play dog in the manger. Under a moral right structure, the great concern is that everybody is able to play dog in the manger.

Second: As some participants pointed out, over the centuries, the similarities between emerging and existing modes of expression always have been greater than the differences between them. Thus, copyright principles have been able to adjust to new technological advances. That's a truth we never should lose sight of in the midst of our concerns and apprehensions. Fortunately, the basic doctrines generally have been supple enough to respond to the new pressures. At times it has been difficult. At times we have cursed the gods for visiting these inventions on our previously serene and stable lives. There is little reason to believe that digital technology will not fit into this love/hate pattern, in much the way its technological forebears have. It will take time and energy and patience. At times it will be painful, but there is little doubt in my mind that the absorptive processes of the copyright law ultimately will prevail.

Third: We have heard a great deal about the threat that an extraordinary number of uses will be made of digital works by an unprecedented number of people. This invocation of numbers implies that the debate is over quantitative differences between digital and predecessor technologies that are beyond the capacity of existing tools. That seems wrong to me. So, let's not think there is a quick legislative solution; let's look, instead, as so many people at this Symposium suggested, at enforcing the rights and administration of copyright and the admittedly arduous task of reformulating the vast networks of private arrangements. These private arrangements are the mortar holding together and connecting the bricks that represent the various members of the copyright community.

Fourth and last: Let us not bemoan these challenges. The very capacities of digital technology and the fact that it will be able to deliver works of expression to countless users in countless ways all over the planet should be viewed as a bountiful joy by those who truly love copyright and the purposes it was intended to promote. We are on the verge of developing dissemination capabilities we could not even dream of a generation ago.

At the risk of being parochial, let me invoke the words of the United States Constitution: digital technology does promote the progress of science and the useful arts. Now it is up to us, as with earlier copyright practitioners, to maximize the fruitfulness of this wonderful new world for all: users, producers, creators, distributors. We must do what our forbears in this field have done.

Let me close on a personal note. I entered this field of copyright because of a personal love of literature, art, music, and drama, as did my heroes, such as Benjamin Kaplan, Learned Hand, Herman Finkelstein, and Abraham Kaminstein. When I started teaching this subject, enrollments were small. Those who took it either wanted something radically different from the tedium of taxation and estate planning, had a gap in their class schedules, wanted an easy course, or, given my peculiar reputation in American law teaching, wanted to see the elephant perform in the academic circus. Now enrollments are huge, and we have to beat them away from the course. Not because so many young Americans love literature and art, music, and drama, but because of their fascination with technology and a recognition of its commercial importance to contemporary law practice. But the positive side is that it reflects the power of technology to provide a true global marketplace of ideas and works of expression.

Finally, I'd like to thank all of the participants for taking the time to travel to Cambridge, Massachusetts, and for gracing this institution with their presence. As Dean Clark stated at the opening session, Harvard Law School truly has a great copyright tradition. In the classroom, the tradition dates back to the days of Professor Zechariah Chafee, continuing with Professor Benjamin Kaplan. Outside the classroom, this institution nurtured Learned Hand who, as a judge, had an extraordinary impact on the development of American copyright law. But it may well be that Supreme Court Justice Oliver Wendell Holmes, one of Harvard Law School's best known alumni, did more to shape the scope of protection for creative works than any other American jurist, because in Herbert vs. The Shanley Co.,² decided about 76 years ago, he held that the performance of a copyrighted musical composition in a hotel dining room violated the copyright of the composer, Victor Herbert. As only Holmes could, he summed it up very pithily: "If music did not pay it would be given up."³

It has truly been a pleasure to host this gathering of renowned experts from around the world. It has been an occasion, I think, on which any of us truthfully can look back and say we were privileged to be with each other.

² 242 U.S. 591 (1917).

³ Id. at 595.

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